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# Surface warfare officer career development: an analysis of historical data

Campbell, William Harrison

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# THESIS

SURFACE WARFARE OFFICER CAREER DEVELOPMENT;  
AN ANALYSIS OF HISTORICAL DATA

by

William Harrison Campbell

June 1980

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Surface Warfare Officer Career Development;  
An Analysis of Historical Data

by

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Submitted in partial fulfillment of the  
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL

June 1980

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## ABSTRACT

Officer Master File data were used to reconstruct and analyze the career paths of a sample of 1,084 year group 1958-1963 Surface Warfare Officers. Of particular concern were the developmental characteristics, apart from performance, which distinguished the careers of commander-command selectees from those of nonselectees. A wide variety of career development opportunities were found to have been provided to Surface Warfare Officers to enable them to qualify for command selection, and the absence of any absolute path to selection or nonselection was confirmed. There were, however, certain individual billet types, combinations of billets and commissioning sources which, if experienced by Surface Warfare Officers, tended to increase or decrease their probability of later command selection. In this regard, the singular importance of the lieutenant commander executive officer tour to command selection was documented.





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## I. INTRODUCTION

In commenting on the qualifications of Naval Officers who aspire to command, John Paul Jones wrote:

It is by no means enough that an officer of the Navy should be a capable mariner. He must be that, of course, but also a great deal more. He should be as well a gentleman of liberal education, refined manners, punctilious courtesy, and the nicest sense of personal honour....

The Naval officer should be familiar with the principles of international law, and the general practice of admiralty jurisprudence, because such knowledge may often, when cruising at a distance from home, be necessary to protect his flag from insult or his crew from imposition or injury in foreign ports.

Thus early recognition was given to the special qualification expected of those who seek command at sea. Today's Surface Warfare Officers compete in a far different and more complex environment than their predecessors, yet the lure to command has remained unchanged.

To ensure that officers receive adequate preparation for such assignment, elaborate professional development paths have evolved which prescribe the qualification standards to be attained as a prerequisite to command. These paths are followed in practice through a complex assignment process. Integral to this process are personal performance criteria which must be considered in each assignment decision. With regard to the relationship between performance and assignment, the U.S. Navy's Unrestricted Line Officer Career Guidebook [1979] states quite succinctly, "The impact of performance is



simple: good people get the good jobs." The implied definition of good jobs here being those which enhance the opportunities for professional development and contribute to command qualification.

Command at sea in the grade of commander has long been the goal of every aspiring Surface Warfare Officer (SWO). Selection for such serves not only to recognize his formal qualifications, but to endorse the career path, and its implied developmental qualities, which lead to selection. To the extent that particular career assignments have enabled an officer to attain the level of professional development required for command qualification, such assignments, in themselves, have tended to enhance his probability of selection. Alternatively, those assignments which have not resulted in similar development may be viewed as having had a degrading or at best neutral effect on his career. Thus, the assignment process can have a profound influence on real or perceived career development opportunities.

Nededog [1975] concluded that lack of career-enhancing billets and poor management of officer career patterns were perceived by passed-over lieutenants to be the major contributors to their failure to be promoted to lieutenant commander. Panchura [1979] noted that among SWO students at the Naval Postgraduate School very definite perceptions existed as to what constituted career-enhancing billets. Similarly, Robertson and Pass [1979] in studying the relationship of





initial duty assignments to retention of Surface Warfare Officers, found that junior SWO's had highly structured opinions as to what constitutes career-enhancing duty assignments.

Perceptions such as these have tended to perpetuate an institutional bias toward certain billets and career paths. In response to this, the Unrestricted Line Officer Career Guidebook [1979] cautions:

There is no one promotional path within the Navy, nor should there be. The officer who best matches personal interests with requirements for fulfilling naval assignments and amplifies those interests with experience and education is the officer most likely to progress in a naval career. The path is competitive; there is no single criterion for achievement--not a graduate degree, nor a particular specialty, a specific combination of specialty and subspecialty assignments, nor an assignment to service college. A timely blending of these and other elements characterizes the career patterns of officers who have contributed more effectively than others to the dynamic needs of the Navy.

This thesis represents an attempt to examine and analyze the actual career paths of a large segment of Surface Warfare Officers who have reached eligibility for selection to command at sea at the commander level. Paths which have historically led to command selection will be compared with paths which have not to determine what kinds of characteristics distinguish the two. Evidence of any common billet sequences within these groups will be explored to determine if any assignment patterns emerge. Finally, the impact of various billet types, combinations of billets and commissioning sources on the likelihood of command selection will be examined.



## II. OBJECTIVES

The objectives of this research are to:

(1) Examine career development opportunities afforded to Surface Warfare Officers by:

- identifying any career paths which may particularly affect the probability of command selection;
- identifying specific billet types or combinations of billets which may particularly enhance or degrade the probability of command selection;

(2) Provide assignment officers with data relative to those billet types or combinations of billets which have historically served to increase or decrease the probability of command selection; and

(3) Evaluate the consistency of assignment policy with career development opportunities actually experienced by Surface Warfare Officers.

The final objective will be achieved through examining the data to determine if evidence exists of any systematic denial of career development opportunity to officers not ultimately selected for command. If such exists, the extent to which it resulted from the assignment process will be further examined.



### III. APPROACH

#### A. GENERAL

The basic approach of this study was to reconstruct, code, and analyze historical data relating to Surface Warfare Officer career paths using frequency distributions and conditional probability analysis. The population of concern included those individuals who had attained sufficient seniority and been given ample time to qualify for selection to commander-level command. Once the career paths of a sample of this population were reconstructed, those which resulted in command selection would be compared and contrasted with those which did not. Among selectees, additional analyses include comparisons of those who were selected early with those who were not.

The career paths of all Surface Warfare Officers in year groups 1958 through 1963 were chosen to become the focus of this research since data for them were relatively complete and each had had sufficient time to screen for command. The specific segment of their careers to be studied included the period from their fifth to seventeenth year of commissioned service, as measured from individual active commissioning base dates. Within this 12-year segment, that portion of their career which led up to command selection or nonselection was of primary concern. The five and seventeen year parameters were used because of: (1) missing data for the early careers



(first five years) of most of this population, and (2) the likelihood of command selection beyond the 17th year of service being quite remote (historically less than 5%). Because professional development is relatively uniform for all Surface Warfare Officers during the first five years of service, little is considered to have been lost to the study as a result of the above data limitation.

## B. DATA DEVELOPMENT

Since it did not readily lend itself to automation, the process of transforming raw data into a suitable form for this research was a lengthy one that involved the identification and appropriate coding of each tour in each career subject to this study. Appendix E presents a complete listing by command selection outcome and year group of the coded data used in the analysis. The general methods for developing these data will be described in the paragraphs that follow.

### 1. Source of Data

Data for this research were obtained from the Officer Master File (OMF) made available through the Navy Personnel Research and Development Center, San Diego. The OMF reflected data current through November 1979. Additional, updated sub-specialty utilization data were obtained in April 1980 from the Naval Military Personnel Command and were current through that date.

In order to interpret the OMF coded data, extensive use was made of the U.S. Navy publication, Manual of Navy





Officer Manpower and Personnel Classifications (NAVPERS 15839D), Volumes I and II (1978). Data fields pertinent to this study were extracted from the OMF and consisted of the following:

- present grade (one-character alpha code indicating present rank)
- year group (two-digit code which generally indicates the fiscal year of commissioning)
- designator (four-digit code used to identify the primary naval specialty qualifications of an officer)
- source code (three-digit code indicating the commissioning source of an officer)
- active commissioning base date (ACBD) (date computed to the day to represent the date when all active commissioned service would have begun if it were continuous to the present)
- command and operational screen results (a five-position alpha-numeric code assigned to officers who have been selected by a Command or Operational Screening Board; the code describes the fiscal year considered and type of command for which selected)
- promotion history (dates officer was promoted to various grades extending from warrant through flag rank)
- college name, education duration and year completed
- subspecialty (a five-character code indicating an officer's subspecialty career field and education or skill area)
- subspecialty utilization (various one-character codes indicating whether or not a subspecialty was used in a particular job)
- service schools, duration and completion dates (schools are represented by three-digit codes)
- Navy Officer Billet Classification (NOBC) (four-digit code which identifies a group of officer billets which are similar but not necessarily identical in scope and nature of duties)



- ship/station codes (SSC) (three-character numerical-alpha code identifying the type of ship or station to which an officer is assigned)
- billet history, with inclusive dates at each station (a listing of a maximum of 8 NOBC's per career).

Data contained in these fields formed the basis for reconstructing career paths. While it would appear from this listing that the billet history field itself might supply all the required information, such was not the case as prior training and certain other duty assignments were not included. Thus, additional data fields were required for cross-referencing purposes to fill in these career gaps. Gaps which still could not be adequately explained after this process resulted in dropped cases. The extent of these, and the remaining sample whose career paths could be used in this study are depicted in Figure 1. Of the 1,720 officers whose career paths were of potential interest to this study, over one-third could not be used because of various data limitations. Their omission, however, did not appear to introduce any strong bias into the research. A cursory examination of these career paths, as they pertained to both selectees and nonselectees, revealed no particular characteristics that made them look any different from those actually used in the study. The 1,084 cases which remained and formed the basis for this study constituted a healthy segment of the year group 1958-1963 Surface Warfare community, and represented a sample of it which was more than adequate for purposes of this research.



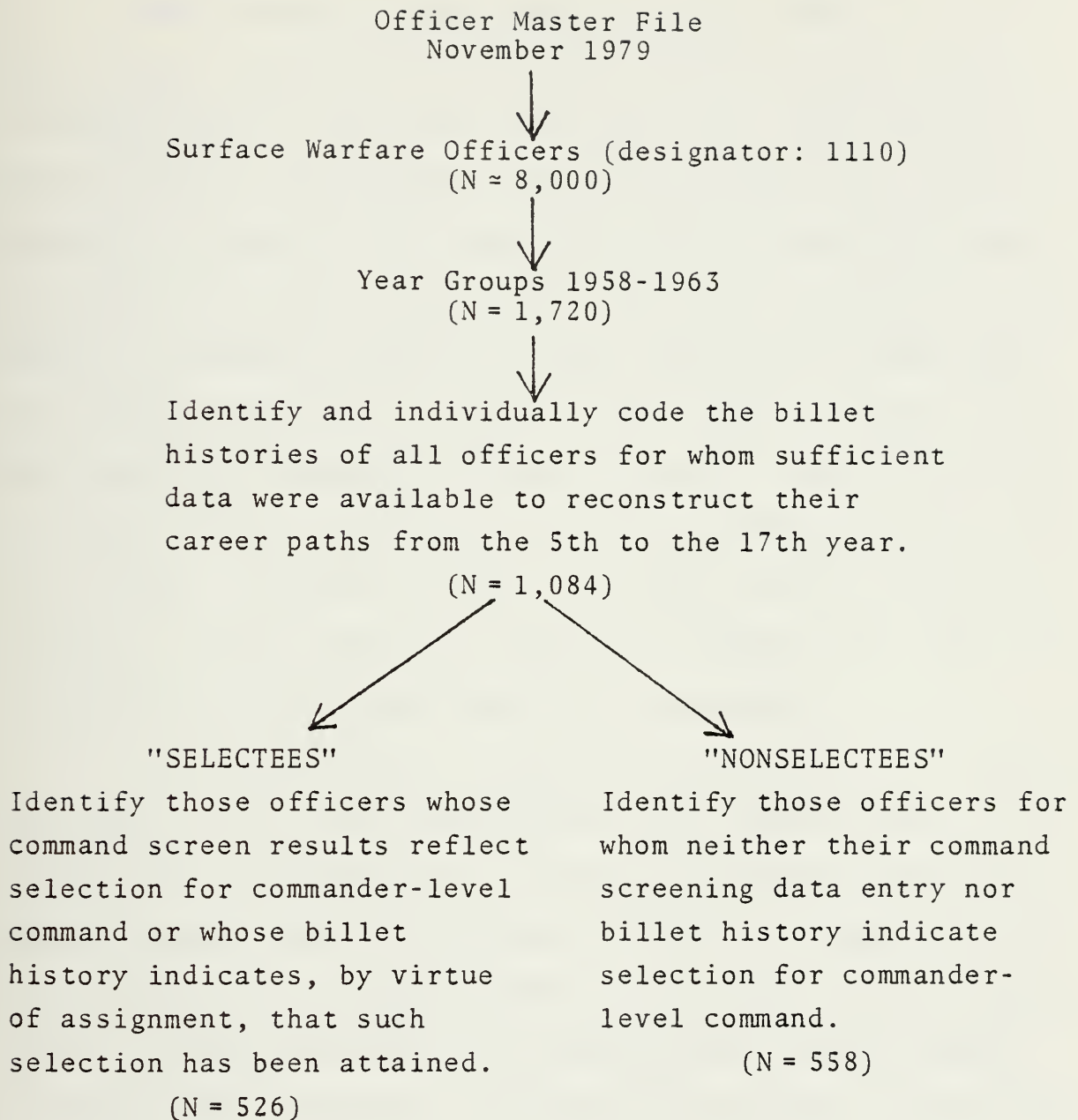


Figure 1. Development of the sample cases used in this study.



## 2. Data Coding

Navy officer billet classifications (NOBC's) are elements of an elaborate code structure within the Navy officer classification system which are used in the identification of officer billet requirements and officer occupational qualifications, and which would seem to be quite suitable for immediate use in a study such as this. However, for purposes here, NOBC's as currently used in the OMF often fail to adequately discriminate among billet types. For example, "9222" is the NOBC code for "commanding officer, afloat." An officer occupying such a billet might be the commanding officer of any variety of ship. Likewise, "9228", the NOBC code for "executive officer, afloat," fails to adequately identify the nature and scope of the duties performed by the incumbent.

In view of this, a separate coding scheme was necessary in order to permit more meaningful billet distinctions. The scheme thus developed had to include sufficient categories in order to make these distinctions, while at the same time providing for a small enough number to permit the desired analysis. After a trial period of using a considerably larger number, seventeen were ultimately determined to represent the desired number of billet categories. Of these, twelve were sea duty billets and five were shore. A listing of these billet categories, their associated codes, and definitions follow. Figure 2 shows a summary of the categories and their aggregations while Figure 3 illustrates the approximate career timing





### Codes for Billet Categories

B - Pre-Department Head (PRE DEPT HD)	K - Late XO (LATE XO)
C - Pursuing Graduate-Level Education (GRAD ED)	L - Post-CO (POST CO)
D - Department Head (DEPT HD)	N - Non-CO (NON CO)
E - Second Department Head (2ND DEPT HD)	O - Ashore, overseas (OSEAS SHR)
F - Ashore, CONUS (CONUS SHR)	P - Post-Department Head (POST DEPT HD)
G - Non-XO (NON XO)	Q - Non-Department Head (NON DEPT HD)
H - Executive Officer (XO)	S - Subspecialty Utilization (SUB UTIL)
I - Post-XO (POST XO)	T - Professional Training (PROF TRNG)
J - Commanding Officer (CO)	

### Codes for Billet Category Aggregations

W - "Traditional" Sea Tour (includes sea tour billet codes: B,D,E,G,H,I,J,K,L and N)
X - "Non-traditional" Sea Tour (includes sea tour codes Q and P only)
Y - Subspecialty Utilization (includes shore tour code S only)
Z - Ashore, other (includes all other shore tour codes, i.e., C,F,O, and T)
SEA - All sea tours (combines W and X)
SHORE - All shore tours (combines Y and Z)

Figure 2. A summary listing of codes used to identify billet categories and aggregations of billet categories used in this study. Short titles for individual billet categories are shown in parentheses.



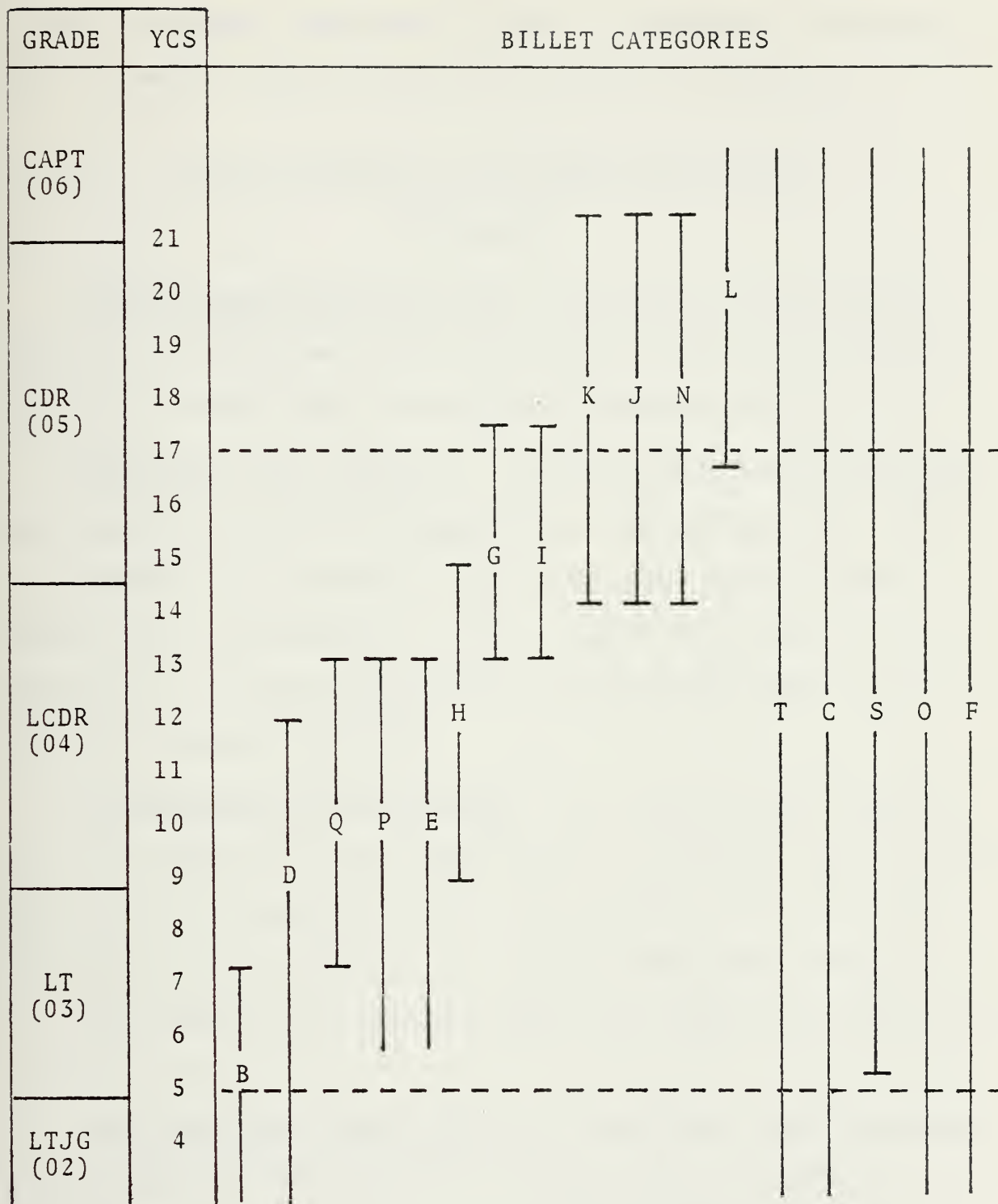


Figure 3. Approximate timing of billet categories in the careers of Surface Warfare Officers by grade and years of commissioned service (YCS). (See Figure 2, page 21, for definitions of billet category codes.)



of each category. Appendix F, which is identical to Figure 2, may be removed from the thesis for ease of reference.

## Billet Categories and Their Definitions

### Sea Tours

Pre-Department Head Tour (B) - Any sea tour occurring prior to the Department Head (D) tour in which the incumbent is no more senior than a mid-grade lieutenant (03).

Department Head Tour (D) - A tour of duty where the incumbent serves as head of a department of an afloat unit, while in paygrade 03 or junior 04 (i.e., the tour starts within three years of promotion to 04). If this tour occurs before paygrade 03, it may be counted as "D" provided that billet is normally occupied by an 03.

Non-Department Head Tour (Q) - Any afloat tour completed by a mid-grade 03 to mid-grade 04 (i.e., the tour starts within four years of promotion to 04) which is not a "D" tour, nor included in any other sea tour category described herein. "Q" codes will not be assigned once a "D" tour has been completed.

Post-Department Head Tour (P) - Any afloat tour following (immediately or otherwise) the "D" tour which is neither a department head tour nor included in any other sea tour category described herein. This classification generally includes senior 03's and is extended to include 04's when the tour in



question starts within four years of promotion to 04. Examples of such tours include CO/XO of small units (other than XO (H) equivalency CO tours, described below), Main Propulsion Assistant/Damage Control Assistant on aircraft carriers, duty on afloat staffs, etc.

Second Department Head Tour (E) - Any department head tour following (immediately or otherwise) a "D" or another "E" tour. To be so classified, the tour must commence within four years of promotion to 04. "E" tours will never follow XO (H) tours.

XO Tour (H) - A tour of duty in which the incumbent serves as executive officer of an afloat unit, while in paygrade 04. This classification is extended to include non "E", post-department head tours completed by nuclear qualified Surface Warfare Officers when such tours fulfill the career requirements of the "H" tour. Additionally, this classification includes certain lieutenant commander CO tours which are considered to be the equivalent of an "H" tour (e.g., CO of PHM, ARS, ATS and, in some cases, FF ship types).

Non-XO Tour (G) - A tour of duty afloat which is completed by a senior 04 (more than four years in grade) to mid-grade 05 (less than three years in grade) which neither is nor follows a commanding officer (J) or executive officer (H) tour.

Post-XO Tour (I) - A non-commanding officer (J) tour of duty afloat following (immediately or otherwise) an "H" tour. This classification generally includes senior 04's to mid-grade 05's.





Late XO Tour (K) - An afloat tour of duty in which the incumbent serves as executive officer while in paygrade 05. If such a tour follows an "H" tour, it will be classified as a post-XO (I) tour.

CO Tour (J) - A tour of duty where the incumbent serves as commanding officer of an afloat unit, while in paygrade 05. If a CO tour occurs before 05, it may be counted as "J" provided that billet is normally occupied by an 05.

Non-CO Tour (N) - An afloat tour of duty served while in paygrade 05 which is neither a "J", "H", nor "K" tour; nor one which follows a "J" or "H" tour.

Post-CO Tour (L) - A non-commanding officer tour of duty afloat following (immediately or otherwise) a "J" tour. This classification generally includes mid-grade to senior 05's and junior 06's.

### Shore Tours

Professional Training (T) - A tour in which training is undertaken of twenty weeks duration or more which is designed to broaden the career, as opposed to specific preparation for the next tour of duty. Examples of such tours include training at the Surface Warfare Officers School Command (Department Head Course), Armed Forces Staff College, and the Naval War College.

Pursuing Graduate-Level Education (C) - A tour of duty in which graduate education is undertaken leading to a subspecialty.



Subspecialty Utilization (S) - A tour of duty ashore in which the incumbent's subspecialty was used. This subspecialty may either be the result of graduate education or significant experience. Such a tour would lead to the designation "proven subspecialist."

Ashore, Overseas (O) - A shore tour served outside the continental United States (CONUS) not meeting any of the above criteria.

Ashore, CONUS (F) - A shore tour served within CONUS not meeting any of the above criteria. This classification also includes any periods of inactive duty.

Based on the above definitions, tours comprising each of the careers reviewed were assigned one of these 17 codes. In order to count as a tour of duty, the incumbent must have held the billet in question for a period of six months or more. Occasionally, tours of duty could take on more than one coding assignment. For example, a tour in which a subspecialty was utilized might also be a sea tour. When this occurred, guidelines for coding precedences had to be developed and applied. Those that were adopted to resolve this and similar conflicts are discussed in Appendix A where a detailed explanation of the entire billet coding process is presented.

The various sources from which these officers had received their original commission were also recorded as part of the billet coding process. These sources were combined into four

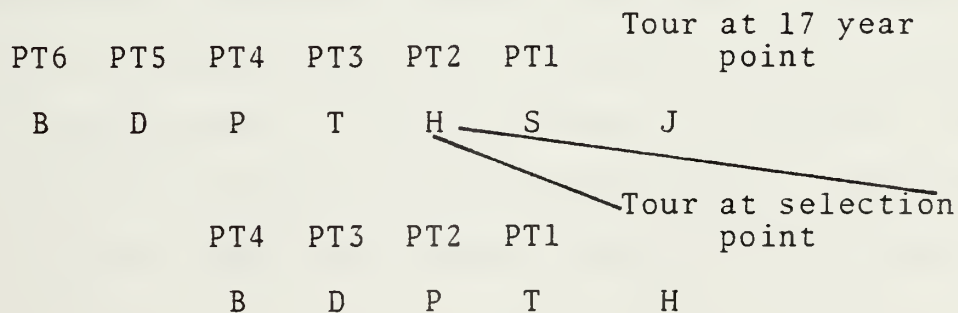


categories with the first three representing the three primary officer accession programs: USNA, NROTC, and OCS. The fourth category was composed of all other accession sources and was designated "OTHER."

### 3. Data Format

Upon completion of the coding process, the data were transferred to data processing cards, one card per career. The final tour recorded in each career of both selectees and nonselectees was that held at the 17 year point. Tours held at this time will be referred to henceforth simply as "tour at 17 year point." Tours occurring prior to this, until the 5 year career point, will be referred to as "prior tour 1" (PT1), "prior tour 2" (PT2), etc.

Within the 12 year interval from the 5 to 17 year career points, this study focused upon that portion of an officer's career leading up to command selection or nonselection. For selectees, the billet held at their point of selection will be referred to as "tour at selection point," with the preceding tours being labeled "prior tour 1," etc. in a fashion similar to above. An example of the data layout for a typical selectee is shown below:





In this example, the selectee was serving in a CO tour (J) at the 17 year point in his career. Immediately prior to that he served in a subspecialty utilization tour (S), and before that he had an XO tour (H), etc. with earlier tours being recorded back to the five year point in his career. For this individual, the point of command selection happened to have occurred during his XO tour. This tour would then become the reference point when considering just those tours leading up to the point of selection. As can be seen, the term "prior tour \_\_\_" is a relative one and does not necessarily refer to a fixed tour position.

### C. ANALYTICAL TECHNIQUES

To further the objectives of this research, two basic analytical approaches were used: frequency distributions and conditional probabilities. Frequency distributions were used to answer a host of questions which largely centered on determining what kinds of billets officers were in at various points in their career. Frequency distributions were also used to identify the most common, or modal, career paths of these officers to various points in their career.

Conditional probability analysis was used to explore the probability of command selection contingent upon the occurrence or nonoccurrence of various events, or factors. Factors to be considered included specific billet types, combinations of billet types, and commissioning source. In the paragraphs





to follow the detailed application of both approaches will be discussed.

### 1. Frequency Distributions

Frequency distributions were obtained through use of the Statistical Package for the Social Sciences (SPSS) by Nie, Hull, Jenkins, Steinbrenner and Bent [1970]. This approach was used to develop general information for comparing the career development of selectees and nonselectees. Portions of the analysis will also include a distinction among selectees as to the timing of selection in their careers. The specific items of comparison to be addressed include the following:

- Average number of tours served
- Average tour length
- Average career timing of selection for selectees
- Year group representation
- Commissioning source representation
- Percentage of officers having had specified billet types at various career points
- Most common career path to the 17th year of service
- Most common path to selection/nonselection.

In order to gain a basic understanding of what kinds of billets comprised the careers of these officers, a simple frequency distribution was performed of the different billet categories at each tour position. This would provide an indicator of the percentage of a particular group of officers who had a given billet type at a specified point in their career.



From this, for example, the percentage of officers among non-selectees who were utilizing a subspecialty during the "tour at 17 year point" could be determined.

As a result of the billet distribution tallies at each tour position, it is possible to determine over the course of several tour positions what percentage of a group of officers have had a particular billet type during the 5 to 17 year segment of their careers by simply taking a cumulative total. A limitation with this, however, is that it is valid only when applied to those billet types which normally occur just once in a career. Because of this, and because of the timing at which they occur, only the D, E, and H billet categories will be used for such purposes here.

By simply counting the number of tours recorded for each officer, summing them and dividing by the group size, the average number of tours recorded per officer during the 12 year period between the 5th and 17th year of service is obtained. The number of complete tours served is somewhat less since, on the average, officers were mid-way through the recorded tours at their 5 and 17 year career points. Accounting for both halves of these tours not actually served during this twelve year period, the average number of complete tours, then, can be determined by simply subtracting 1 from the average number of tours recorded. Knowing this, it is possible to get a reasonable estimate of the average tour length for a given group of officers. It should be understood, however, that







and determining the most common path to a point of selection or nonselection, this study distinguishes selectees as either being "early" or "due course." Those whose SPOINT index was 4, 5 or 6 were designated "early" selectees, and those whose SPOINT was 3 or less, "due course" selectees. These two groups, together with nonselectees, were then compared at common career points.

The preceding analyses have considered particular billet types independent of each other with no consideration of the possible sequences of billets that individuals may have leading up to certain points in their careers. The Unrestricted Line Officer Career Guidebook [1979] stresses that career patterns are as varied as the number of officers that pursue them, and adds that there is no absolute path to "success." If, however, common paths did exist leading to command selection or nonselection for a significant number of officers, it would be important for career managers to be aware of them and their implications for the assignment process.

To determine whether such paths have historically existed, billet categories were sorted, tour position within tour position, starting at that point considered to be most significant and then progressing back in time. A standard IBM utility sort program was used for this purpose. If, for example, the most common career path to command selection were sought, the sort would be set to begin at the selection point tour. This sort would produce a sequential listing of existing





billet categories. Within each of these categories, a sort of the categories existing in the previous tour would be listed, and so forth until each tour position had been sorted and the 5 year career point reached. Figure 4 shows the general approach taken using a small example of ten cases. The example indicates that for this small sample the most prevalent billet held at the time of selection was executive officer (H). Among those, subspecialty utilization (S) was the most common billet immediately prior, and so forth. The most common, or modal, path from the 5 year point to selection would then be T D P S H, over which sequence 20% of this group travelled.

This study will identify and compare the career paths of "early" selectees, "due course" selectees, and nonselectees. Among these three groups, career paths will be compared as follows:

- (1) Paths leading to the 17 year point in their career
- (2) Paths leading to selection/nonselection at varying career points as follows:
  - a) Point of "early" selection/nonselection  
(11.5 year career point)
  - b) Point of "due course" selection/nonselection  
(15 year career point)
- (3) Paths leading to selection/nonselection when combining billet categories.

## 2. Conditional Probability Analysis

This approach was used to determine how important to selection, historically, various billet types have been individually or in combination with other billet types.



Among the 10 career paths, 5 experienced  
H tours at the point of selection  
(tour at selection point)



Of these 5 career paths, 4 experienced an  
S tour in the tour immediately prior (PT1)



Of these 4 career paths, 3 experienced a  
P tour immediately prior (PT2)



Of these 3 career paths, all experienced a  
D tour immediately prior (PT3)



Of these 3 career paths, 2 experienced a T  
tour immediately prior (PT4)



Figure 4. An example of ten cases showing the sorting procedure used to determine the most common career paths, starting at the point of selection and progressing back in time.



Specifically, this phase of the research examines the conditional probability of selection or nonselection to command contingent upon having completed a particular tour or combination of tours, with source of commissioning being considered one of the variables. The calculation of conditional probabilities was accomplished through use of Bayes' theorem, which is addressed in most texts on probability, and discussed briefly in Appendix B to this study. Appendix B also includes a sample calculation of the conditional probability of selection having completed an executive officer (H) tour, together with a table of its associated joint probabilities which provides a more intuitive understanding of the results.

As a basis for applying Bayes' theorem, the overall probability of selection and nonselection had to be determined. For selection, this was accomplished by simply dividing the total number of year group '58 - '63 commander command selectees by the total number of both selectees and nonselectees in those year groups. The resulting probability represents the proportion of officers in year groups '58 - '63 who:

- (1) remained on active duty long enough to be considered for selection;
- (2) were on active duty in November 1979 and, therefore, included on the Officer Master File; and
- (3) were selected for commander-level command, with such selection being reflected in the OMF data.

When considering only those officers who attained the rank of commander, the probability of command selection was .55, which is consistent with published data from the Naval Military



Personnel Command regarding command opportunity once attaining that rank. This study, however, has included the career paths of officers who did not attain the rank of commander as well as those who did and, therefore, uses a larger denominator in the calculation. As a result, the probability of selection to be used in this study is considerably lower and computes to be approximately .40. The probability of nonselection, then, is simply the complement of this, or .60.

For purposes of this analysis, it was important to know whether a particular billet type, or combination of billets, did or did not exist in a career. Thus, one/zero logic was applied: one if the billet, or combination, occurred (any number of times) in a career, and zero if it did not occur. From this, the probability of having a particular billet type, or combination of billets, from among a given group of officers could be determined. For selectees, the analysis included only those tours served in at the point of selection and prior since tours served afterward had no bearing on the professional development that led to selection.

In order to determine the number of careers in which various billet types or combinations of billet types occurred, a computer search of the data was performed using specialized FORTRAN subroutines. In addition to tallying individual billet types, the search was programmed to detect and count all possible combinations of two and three billet categories that existed in each career path. During this search, combinations





were counted without regard to order or whether they occurred consecutively. Hence, the purpose of the search was to identify the mere presence of all two and three billet categories in each career path. In this analysis, source of commissioning was treated as if it were a billet category.

Having thus determined how often individual billet types and various combinations occurred, those which were most prevalent in the career paths being studied would be examined to determine what impact they had on the probability of command selection.



#### IV. ANALYSIS AND FINDINGS

##### A. GENERAL

The findings of this study may be broadly summarized as follows:

- A wide variety of career development opportunities have been provided to Surface Warfare Officers.
- There is no absolute path to "success."
- Certain commissioning sources, billet types, and combinations of billets have tended to enhance or degrade the probability of command selection.

The basic approach to analyzing the data was to compare the career paths of commander command selectees with those of nonselectees using the methods previously described. Among selectees, some analyses will also compare the career paths of "early" and "due course" selectees. From this, certain generalizations may be made regarding any characteristics that may tend to distinguish one group from the other(s). The paragraphs that follow will present and develop these comparisons.

The average number of tours served by selectees over the course of their 5 to 17 year career points was 6.5. This resulted in an average tour length of approximately 22 months. During a similar period in their careers, nonselectees experienced slightly fewer tours, averaging just 5.9 with a correspondingly longer average tour length of 24 months. This suggests that nonselectees may have been assigned fewer short



tours than selectees, an example of which might be the professional training (T) tour, with a typical duration of under one year.

Among selectees as a whole, selection to command occurred on the average just beyond their fourteenth year of commissioned service. Of the 526 selectees, 110 were designated "early" selectees, having been selected at least three tours prior (SPOINT 4,5,6) to their 17 year point tour. The average timing of selection for this group occurred at the 11.5 year career point. The remaining 416 selectees were designated "due course" and experienced selection to command at approximately their fifteenth year of commissioned service. Hence, the point of "early" selection or nonselection for officers in this study is their 11.5 year career point, and the point of "due course" selection or nonselection is the 15th year of service. These career reference points will be used for purposes of examining billet types most commonly held at various career points and in determining the most common, or modal, career paths to points of selection or nonselection.

Selectees and nonselectees were reasonably well balanced with respect to seniority. Table I depicts the year group representation of these two groups and shows that approximately two-thirds of both were comprised of officers from year groups '60 through '62.



TABLE I  
Distribution of Sample by Year Group  
and Command Screen Outcome

Year Group	<u>Outcome</u>			
	Selectees		Nonselectees	
	Number	(%)	Number	(%)
58	67	(13)	17	(3)
59	76	(14)	62	(11)
60	116	(22)	100	(18)
61	110	(21)	135	(24)
62	110	(21)	162	(29)
63	47	(9)	82	(15)
Total	526		558	

Tables II and III provide some insight as to the percentage of officers having had specified billet types at various points between the 5th and 17th year of their careers. Of particular note are billet codes D, E, H, G, T, C, S, F, and O.

The department head (D) tour is often viewed as the building block upon which the intermediate phase of a Surface Warfare Officer's career is built. Hence, it is during this tour that the career development process starts in earnest that will eventually lead to command screening. Tables II and III and Figure 5 show the rough equivalency among selectees and nonselectees with respect to this fundamental tour.





TABLE II

Number of Tours Served by Selectees by Billet Type  
and Tour Position from the 5 to 17 Year Career Points

Tour Position	B	D	Q	P	E	H	G	I	K	N	J	L	T	C	S	F	O	Sub- Totals
17 Yr PT					1	2	1	28	11		220	13	21	5	122	87	15	526
PT1				1	1	87	5	39	16		75	2	48	8	135	91	18	526
PT2		5	3	12	19	176	3	28	1		27		87	12	71	66	16	526
PT3		13	9	47	13	138		26			4		87	32	64	64	29	526
PT4		39	12	78	34	58		5			1		70	50	48	82	49	526
PT5	3	82	28	89	13	12							39	65	34	109	45	519
PT6	27	91	18	69	4	2							36	75	10	81	32	445
PT7	26	58	12	24	2								21	37	3	41	20	244
PT8	16	26	2	6									9	8		12	2	81
PT9	3	5		1									1				1	11
PT10		1																1
Totals	75	320	84	327	87	475	9	126	28	0	327	15	419	292	487	633	227	3,931
% Total	1.9	8.1	2.1	8.3	2.2	12.1	0.2	3.2	0.7	0	8.3	0.4	10.7	7.4	12.4	16.1	5.8	

\* See Figure 2, page 21, for billet code definitions.



TABLE III

Number of Tours Served by Nonselectees by Billet Type  
and Tour Position from the 5 to 17 Yr Career Points

Tour Position	B	D	Q	P	E	H	Billet Types*							Sub- Totals				
							G	I	K	N	J	L	T		C	S	F	O
17 Yr PT							15	53	19						238	177	56	558
PT1		3	3	11	7	82	73	56	4				14	8	128	117	52	558
PT2		10	12	34	44	103	34	17					37	12	85	113	57	558
PT3		27	11	64	54	77	1	3					47	25	57	112	80	558
PT4	6	80	26	66	37	25		3					48	46	35	99	83	554
PT5	23	98	31	73	20	6							42	63	11	96	61	524
PT6	26	105	14	39	3								33	39	2	67	38	366
PT7	16	40	6	10	2								20	20	1	24	9	148
PT8	12	5	1	1									3	4		6	4	36
PT9																		2
PT10																		0
Totals	83	370	104	298	167	293	123	132	23	0	0	0	244	217	557	811	440	3,862
% Total	2.1	9.5	2.7	7.7	4.3	7.6	3.2	3.4	0.6	0	0	0	6.3	5.6	14.4	21.0	11.4	

\* See Figure 2, page 21, for billet code definitions.



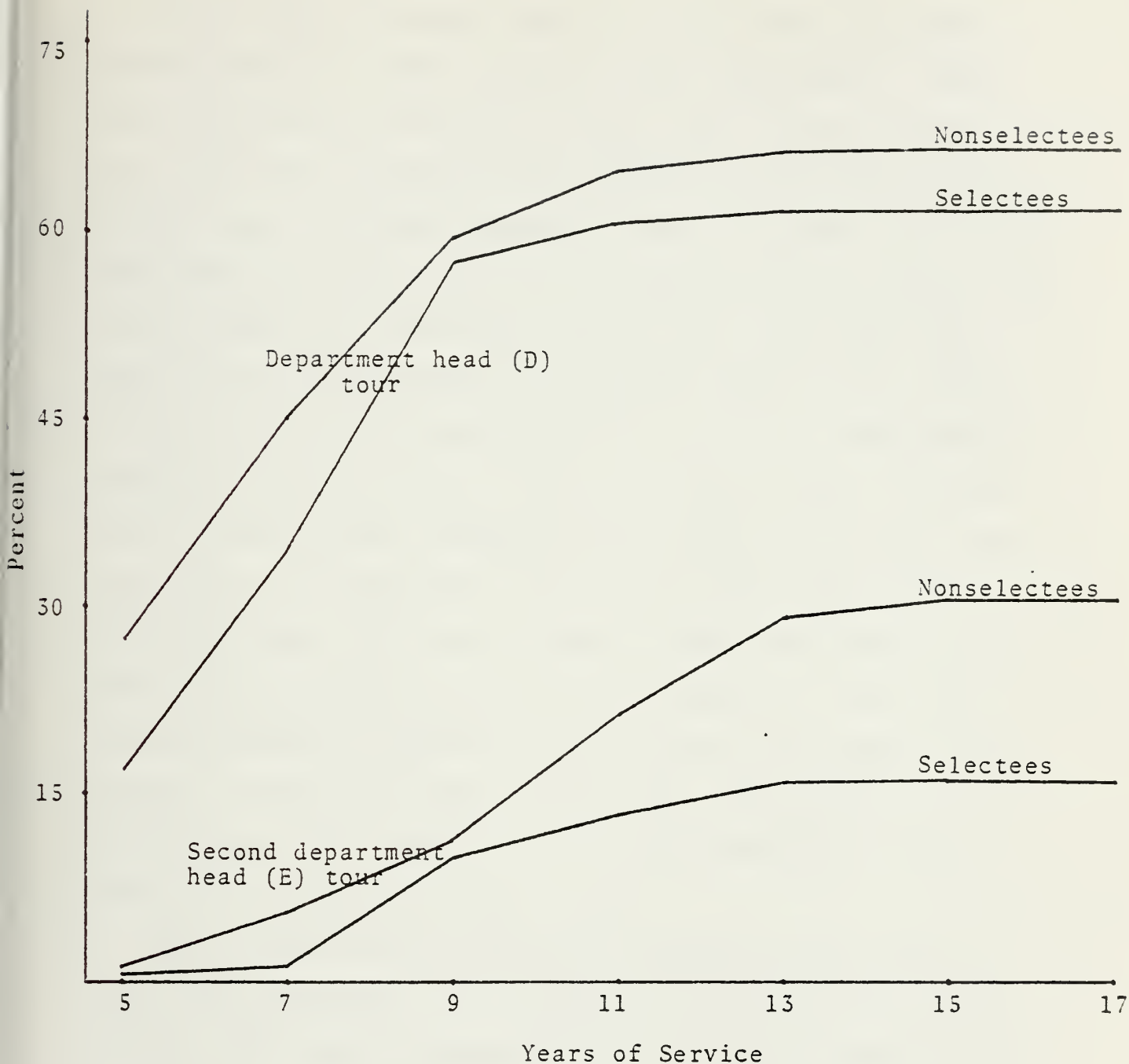


Figure 5. Cumulative percentage of selectees and nonselectees having entered or completed a department head or second department head tour between the 5th and 17th years of their careers.



Later tours, however, start to reveal some noteworthy dissimilarities in the careers of these two groups. Apart from the obvious difference in the J and L billet categories, selectees and nonselectees tended to experience certain billet types in greater proportion than the other. The second department head (E), non-XO (G), subspecialty utilization (S), ashore CONUS (F), and ashore overseas (O) tours were each experienced proportionately more among nonselectees. When contrasted to those selectees having an E tour, nonselectees tended to have this tour at a greater rate beyond the ninth year in their career, suggesting that such a billet may have been used as a "get-well" tour to facilitate unmet warfare qualifications. The career timing of this tour among selectees and nonselectees is depicted in Figure 5. The G tour was experienced by relatively few officers, but among those having it almost all were nonselectees. Like the E tour, this may well have functioned to provide additional opportunity to develop operational skills.

While nonselectees experienced proportionately more S tours than selectees, it is evident that this was due almost solely to the heavy concentration of utilization tours experienced by them during the 17 year point tour, at which time the bulk of selectees were at sea in a command tour. Up to this career point, the rate of subspecialty utilization between the two groups appears to be quite comparable. Among the remaining shore billet categories, nonselectees had





proportionately more F and O tours while experiencing fewer professional training (T) and slightly fewer graduate education (C) tours.

Perhaps the most noteworthy dissimilarity in the career paths of the two groups is the rate at which selectees had an executive officer (H) tour compared with nonselectees. This is graphically depicted in Figure 6. The H tour has long been perceived as the pivotal tour in the intermediate career development of a Surface Warfare Officer and one that is virtually required for command selection. The data presented thus far tend to support this notion.

Another billet category which selectees had proportionately more of and which is worthy of further comment is the professional training (T) tour. The proportional advantage here is weighted somewhat toward the latter part of their careers, indicating that selectees were more apt than nonselectees to have junior and senior service college assignments.

It may be noted in Tables II and III that no tours were assigned to billet category N (non-CO tour) for the officers in this study. While such assignment was made to a limited number of cases, each was subsequently dropped from the data for varying reasons. However, because it represented a valid potential billet assignment, the category was retained.

To briefly summarize what has been presented thus far regarding the distribution of billet types to selectees and nonselectees:



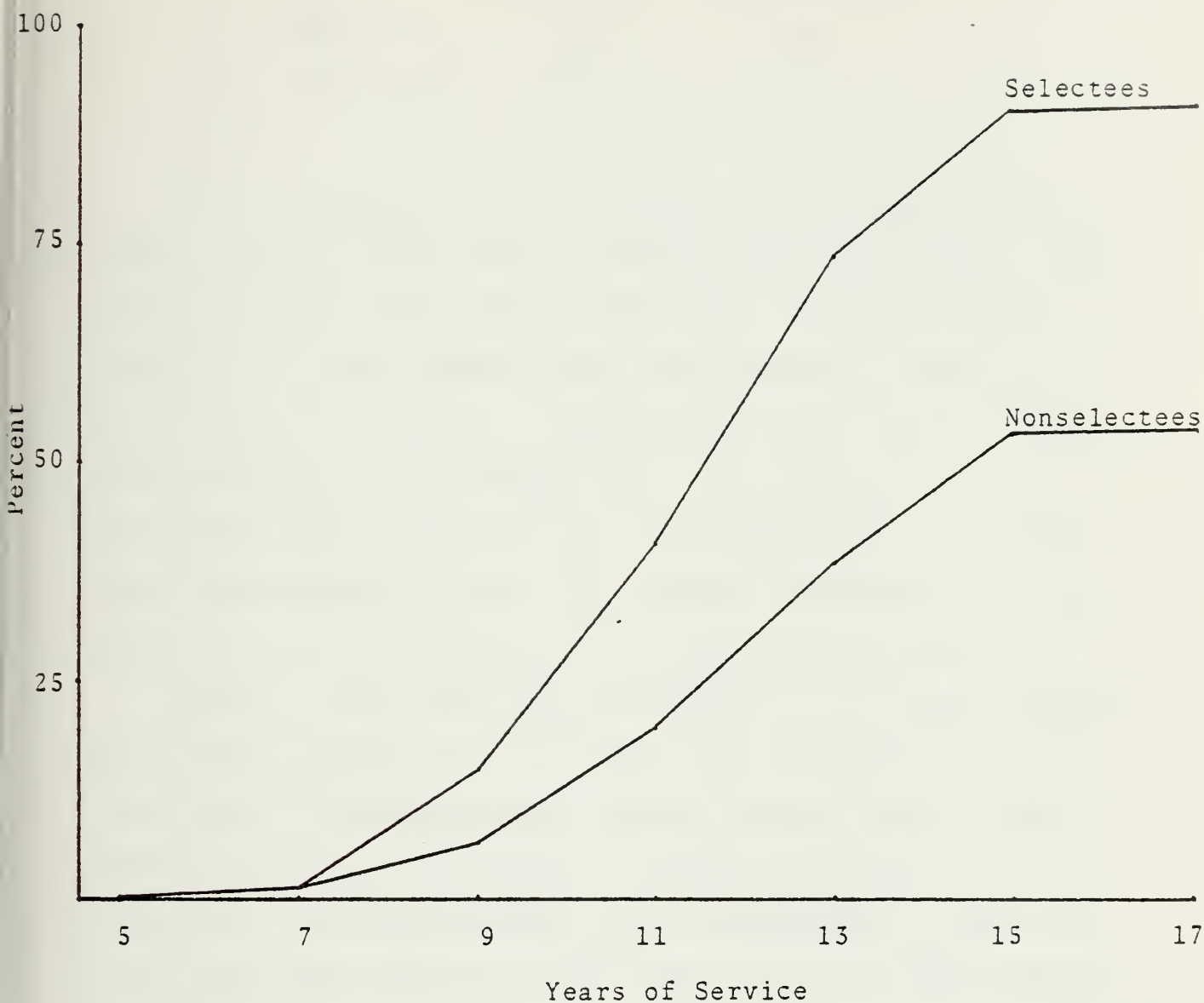


Figure 6. Cumulative percentage of selectees and nonselectees having entered or completed an executive officer (H) tour between the 5th and 17th years of their careers.



	Selectees	Nonselectees
More sea	H	E,G
More shore	T,C	S,F,O

Table IV presents data comparing the percentage of sea tours served to total among selectees and nonselectees. The tour at 17 year point reflects the heavy concentration of selectees in their command tour and nonselectees who were utilizing a subspecialty. Ignoring this tour position, and considering just PT1 through PT10, it is clear that both groups have had essentially the same opportunity for professional development at sea. The primary difference is in the kinds of sea tours served after the department head tour.

Figures 7 and 8 show the distribution of the most commonly held billet categories of selectees and nonselectees with an indication of the approximate career timing of each. The composition of these groups by commissioning source is also depicted. The block entitled "NO TOUR RECORDED," simply reflects the fact that the 5 year career point for many officers occurred during a tour position later in time than PT6 or PT7. Hence, there was no tour recorded for them until that later tour position (e.g., PT4 or PT5) during which their 5 year career point occurred.

Once again, in comparing the billet composition of selectees and nonselectees, the trends discussed earlier relative to the GRAD ED (C), DEPT HD (D), XO (H) and SUB UTIL (S)



TABLE IV

Relative Frequency of Sea Tours to Total Tours Served  
at Each Tour Position by Command Screen Outcome

Selection				Nonselection			
Tour Position	Sea Tours	Total Tours	% Sea	Tour Position	Sea Tours	Total Tours	% Sea
17 Yr PT	276	526	52%	17 Yr PT	87	558	16%
PT1	226	526	43%	PT1	239	558	43%
PT2	274	526	52%	PT2	254	558	46%
PT3	250	526	48%	PT3	237	558	42%
PT4	227	526	43%	PT4	243	554	44%
PT5	227	519	44%	PT5	251	524	48%
PT6	211	445	47%	PT6	187	366	51%
PT7	122	244	50%	PT7	74	148	50%
PT8	50	81	62%	PT8	19	36	53%
PT9	9	11	82%	PT9	2	2	100%
PT10	1	1	100%	PT10	0	0	0
Total	1,873	3,931	47.6%		1,593	3,862	41.2%
(Total less 17 Yr PT)	1,597	3,405	46.9%		1,506	3,304	45.6%









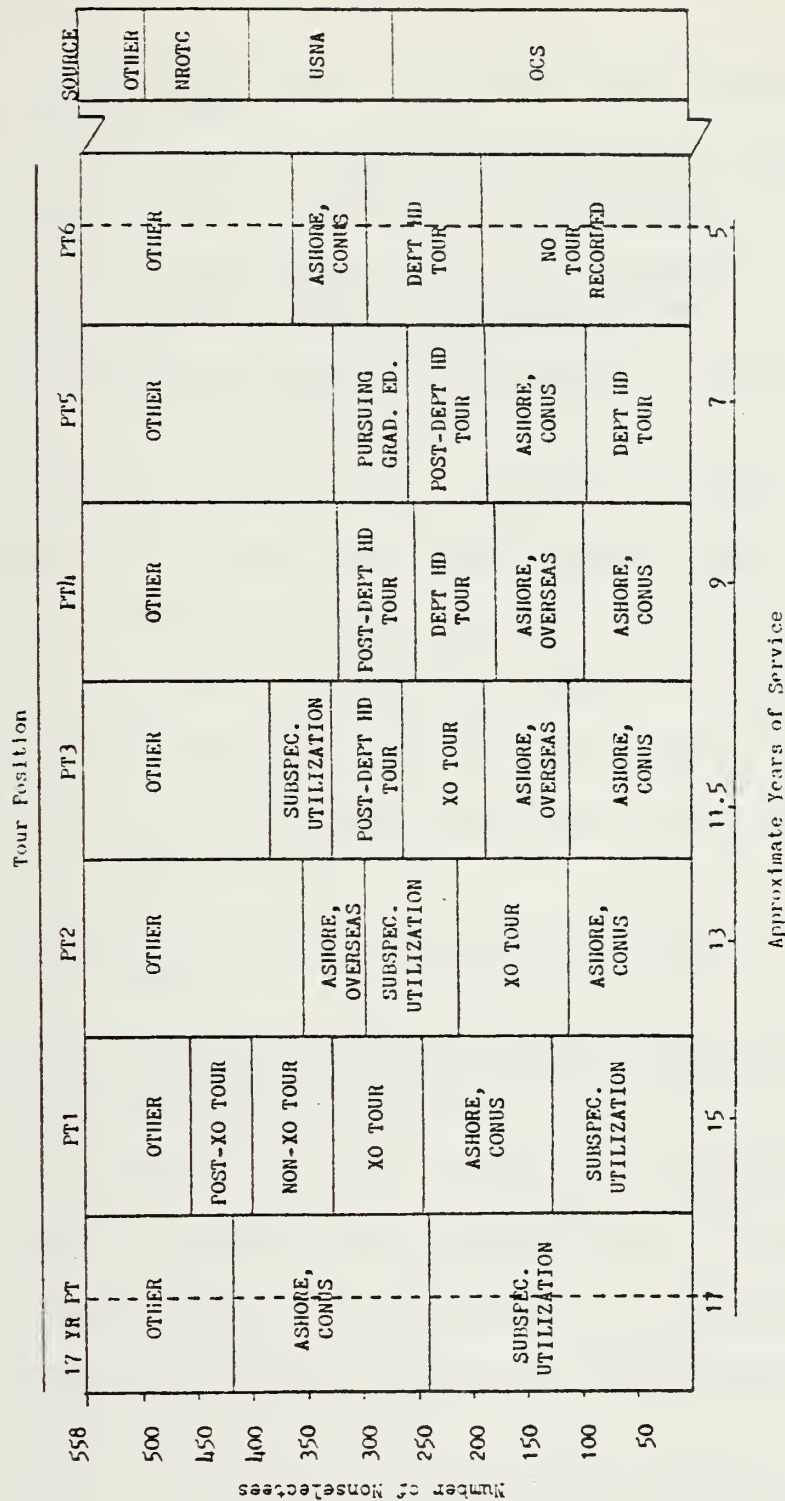


Figure 8. Billet categories most commonly held by the 558 nonselectees at various points in their careers. The 11.5 year point is the approximate time of non-"early" selection for this group and the 15 year point is the approximate time of later non-selection.



tours are evident. Some other observations worthy of note include:

- The slightly longer and fewer tours experienced by nonselectees.
- The absence of professional training among the more commonly held billets of nonselectees.
- The post-department head tour tending to occur slightly later in the careers of nonselectees.
- A relatively greater percentage of nonselectees whose source of commissioning was OCS.

Figures 9 and 10 reflect the most commonly held billet categories of "early" and "due course" selectees, respectively. Although "early" selectees tended to have slightly shorter tours, no attempt was made to reflect this fine distinction in the illustrations. The characteristics emerging from these figures which distinguish the careers of "early" selectees are the following:

- Earlier CO, XO, post-department head and department head tours.
- Proportionately more are in an XO tour at their selection point (11.5 years) than "due course" selectees at their selection point (15 years).
- Proportionately more professional training.
- Proportionately less subspecialty utilization.
- Roughly equivalent percentage of sea tours.
- Relatively greater percentage whose source of commissioning was USNA.

Hence, many of the factors which served to distinguish selectees from nonselectees, also tend to appear when contrasting "early" selectees and "due course" selectees.



Figure 9. Billet categories most commonly held by the 110 "early" selectees at various points in their careers. The 11.5 year point is the approximate time of early selection.





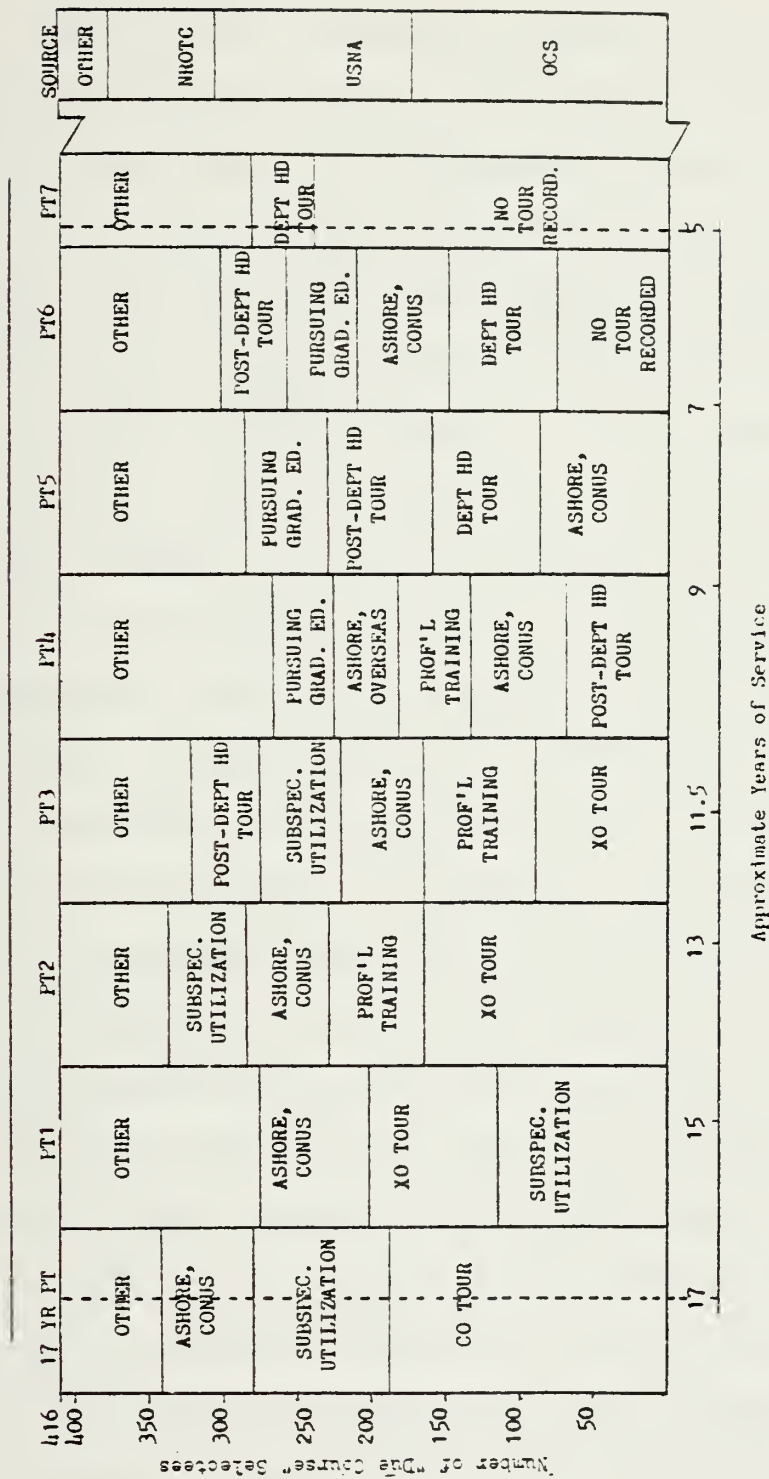


Figure 10. Billet categories most commonly held by the 416 "due course" selectees at various points in their careers. The 11.5 year point is the approximate time of non-"early" selection. The 15 year point is the approximate time of later selection.



## B. MODAL CAREER PATHS

If common billet sequences existed for a large segment of a given group of officers, the implications of deviating from this path would be of concern to career managers. To explore the existence and prevalence of any such common billet sequences, this study examines the career paths of "early" selectees, "due course" selectees, and nonselectees leading to various points in their careers. First, common paths leading up to their 17 year career point will be examined. Next, common paths leading to a point of "early" selection or nonselection (11.5 year career point) for each of the three groups will be determined. And finally, common billet sequences leading to later selection/nonselection (15 year career point) for "due course" selectees and nonselectees will be ascertained.

As stated earlier, the approach to this phase of the research was to sort billet categories, tour position by tour position beginning at the 17 year career point or point of selection/nonselection and progressing back in time. Such a process would theoretically result in complete sequences from the 5 year points leading to the later career point of specific interest. Parish [1979] and Morris [1980] noted, however, in research of a similar nature that extreme dispersion in career paths took place when progressing back through tour positions in this manner. Hence, this research attempted to look no further back in time than "prior tour 3." If any path leading



from this tour to later career points were particularly prevalent, the sort would then be expanded to include earlier tours.

Paths leading to the 17 year career point for "early" selectees, "due course" selectees and nonselectees, when extending back three tours to approximately their 11 year career point, were determined in order to be compared and analyzed. However, during the sort extreme dispersion was noted for all three groups as the numbers grew thin very rapidly when progressing back through each tour. As a result, no one path was statistically significant in these samples. The results of this sort for each of the above groups may be found in Appendix C, Figures C-1 through C-3.

The various paths of the three groups to a point of "early" selection or nonselection (11.5 year career point) were then studied to see if any particular path or trends might emerge. Once again, rapid dispersion was experienced and the sorts were terminated after progressing back in time only two tours. Again, all numbers thinned to the extent that no one path for any group was significant. The results of this sort for each group may be found in Appendix D, Figures D-1 through D-3.

The paths of "due course" selectees to their average point of selection (15 year career point), and those of nonselectees to a similar point in their careers were then examined. As before, the numbers thinned rapidly and evenly, resulting once again in no particular path for either group being more significant than the other. These results appear in Appendix D, Figures D-4 and D-5.



In each of the above cases, billet categories dispersed rapidly, even when limiting the sequence to a total of just three tour positions. As can be determined from the figures in Appendices C and D, in no case did the probability of occurrence of any of these paths exceed .05. One must, therefore, conclude that at least with the original number of billet categories, there is no strong tendency with the group of officers in this study to follow a common career path through any meaningful period of time.

In a further attempt to identify any common career path tendencies, the original 17 billet categories were aggregated into four categories as previously described in Figure 2. Paths leading to selection/nonselection were then determined in the same manner as before. The findings are described in the paragraphs that follow.

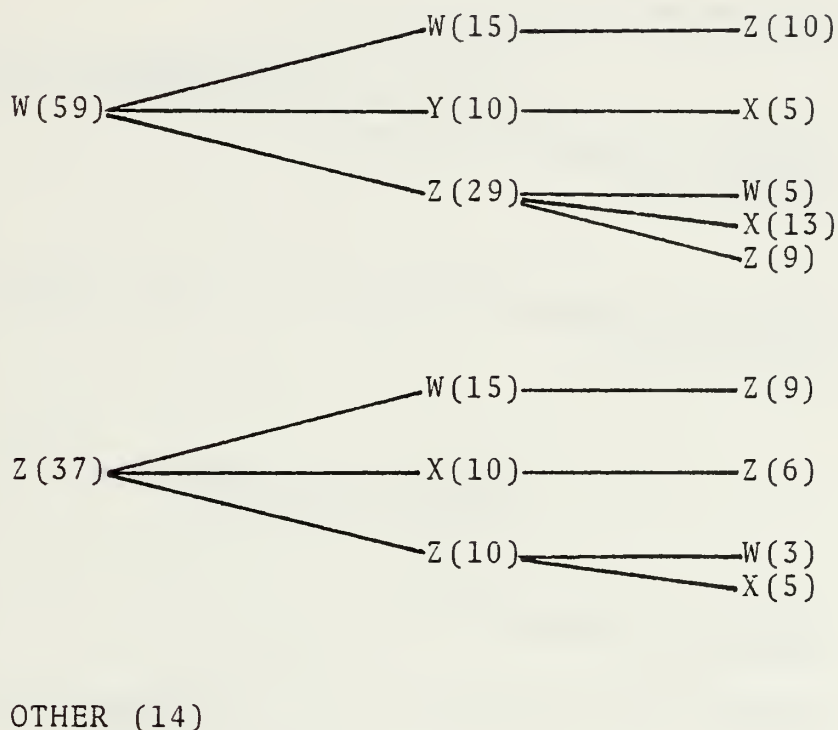
Figures 11-13 depict the career paths of "early" selectees, "due course" selectees, and nonselectees respectively, leading to a point of "early" selection or nonselection (11.5 year career point) when aggregating billet types into four categories and extending back two tours prior, to approximately the 7 year career point. The resulting modal paths from the 7 to 11.5 year career points and their probability of occurrence are as follows:

	<u>Path to 11.5 Year Point</u>	<u>Probability of Occurrence</u>
"Early" Selectees	X→Z→W	.12
"Due Course" Selectees	Z→Z→W	.11
Nonselectees	Z→Z→W	.11





TOUR AT SELECTION POINT (Average length of service = 11.5 yrs)	PRIOR TOUR 1	PRIOR TOUR 2
--	--------------	--------------



Legend: W = Traditional Sea Tour  
 X = Non-traditional Sea Tour  
 Y = Subspecialty Utilization  
 Z = Ashore, other

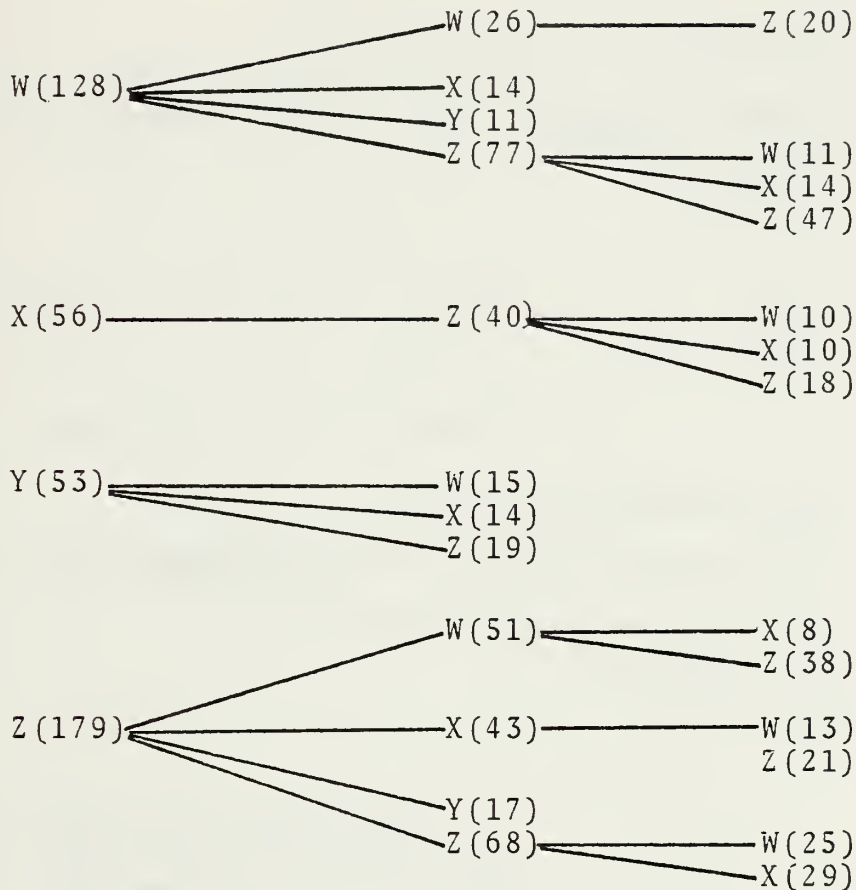
Figure 11. Career paths to selection for "early" selectees when aggregating billet types into four categories (N = 110). Sum of branches will not always equal their source due to (1) the omission of categories with small numbers, and (2) the coding of careers back to the 5 year point only. See Figure 2, page 21, for composition of aggregated categories.



TOUR AT 11.5 YRS SERVICE

PRIOR TOUR 1

PRIOR TOUR 2

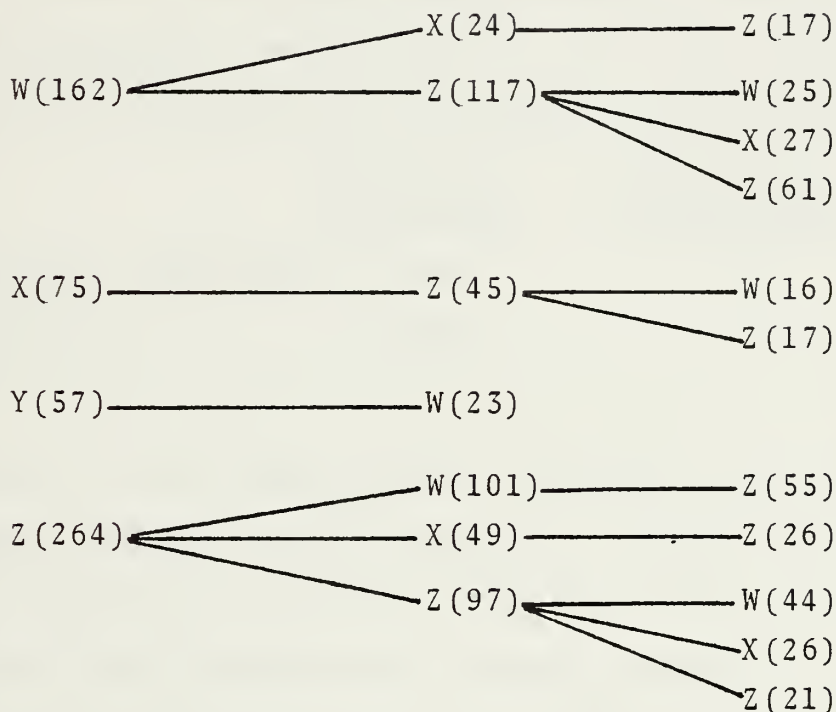


Legend: W = Traditional Sea Tour  
 X = Non-traditional Sea Tour  
 Y = Subspecialty Utilization  
 Z = Ashore, other

Figure 12. Career paths to 11.5 years of service for "due course" selectees when aggregating billet types into four categories (N = 416). Sum of branches will not always equal their source for reasons described in Figure 11. See Figure 2, page 21, for composition of aggregated categories.



TOUR AT 11.5 YRS SERVICE      PRIOR TOUR 1      PRIOR TOUR 2



Legend: W = Traditional Sea Tour  
 X = Non-traditional Sea Tour  
 Y = Subspecialty Utilization  
 Z = Ashore, other

Figure 13. Career paths to 11.5 years of service for nonselectees when aggregating billet types into four categories (N = 558). Sum of the branches will not always equal their source for reasons described in Figure 11. See Figure 2, page 21, for composition of aggregated categories.



Figure 14 depicts the career paths of "due course" selectees leading to their point of selection (15 year point) when extending back two tours prior. Figure 15 traces the paths of nonselectees over an equal career segment. The resulting modal paths from approximately the 11 to 15 year career points and their probability of occurrence are as shown below:

	<u>Path to 15 Year Point</u>	<u>Probability of Occurrence</u>
"Due Course" Selectees	Z→W→Y	.10
Nonselectees	Z→W→Z	.11

As a result of this aggregation, the numbers for the various sequences understandably increased. Despite this, however, the dispersion of the four categories over just three tour positions was considerable, yielding probabilities of any one sequence occurring no greater than .12. Once again, no one particular path emerged as being significant.

In still a further effort to determine the existence of some commonality of billet sequences, these four categories were then compressed to two categories, "sea" and "shore," and subjected to the same comparisons as before. The results when resorting to this ultimate billet aggregation are discussed below.

Figures 16-18 depict the career paths of each of the three groups to a point of "early" selection or nonselection when aggregating billet types into two categories and extending back two tours prior. The resulting modal paths from

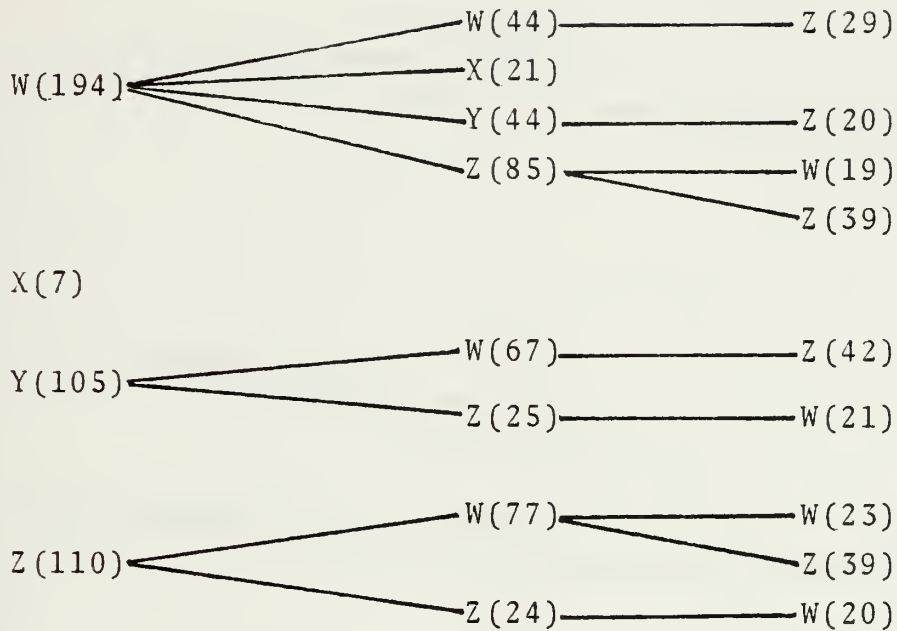




TOUR AT SELECTION POINT  
(Average length of  
service = 15 yrs)

PRIOR TOUR 1

PRIOR TOUR 2



Legend: W = Traditional Sea Tour  
X = Non-traditional Sea Tour  
Y = Subspecialty Utilization  
Z = Ashore, other

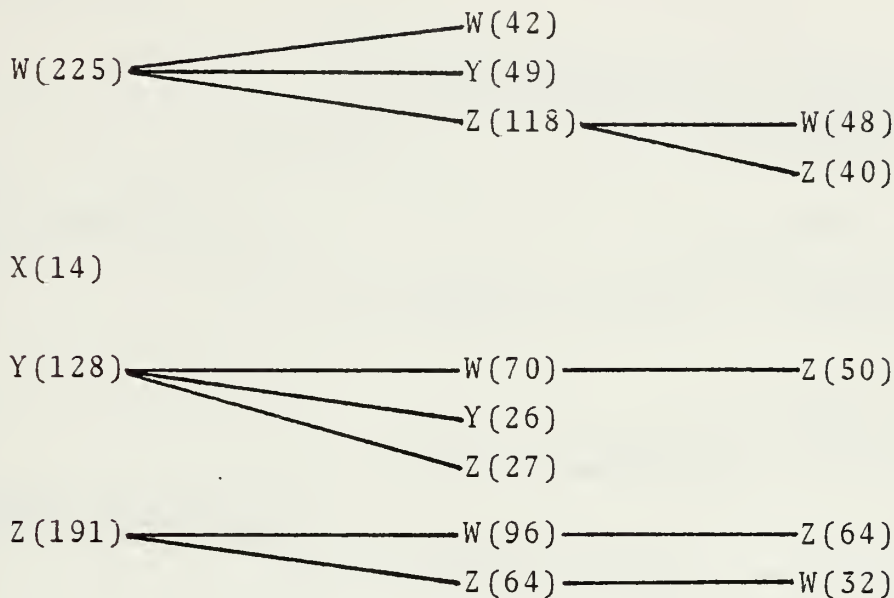
Figure 14. Career paths to selection for "due course" selectees when aggregating billet types into four categories (N = 416). Sum of the branches will not always equal their source for reasons described in Figure 11. See Figure 2, page 21, for composition of aggregated categories.



TOUR AT 15 YRS SERVICE

PRIOR TOUR 1

PRIOR TOUR 2



Legend: W = Traditional Sea Tour  
 X = Non-traditional Sea Tour  
 Y = Subspecialty Utilization  
 Z = Ashore, other

Figure 15. Career paths to 15 years of service for nonselectees when aggregating billet types into four categories (N = 558). Sum of the branches will not always equal their source for reasons described in Figure 11. See Figure 2, page 21, for composition of aggregated categories.



TOUR AT SELECTION POINT  
(Average length of  
service = 11.5 yrs)

PRIOR TOUR 1

PRIOR TOUR 2

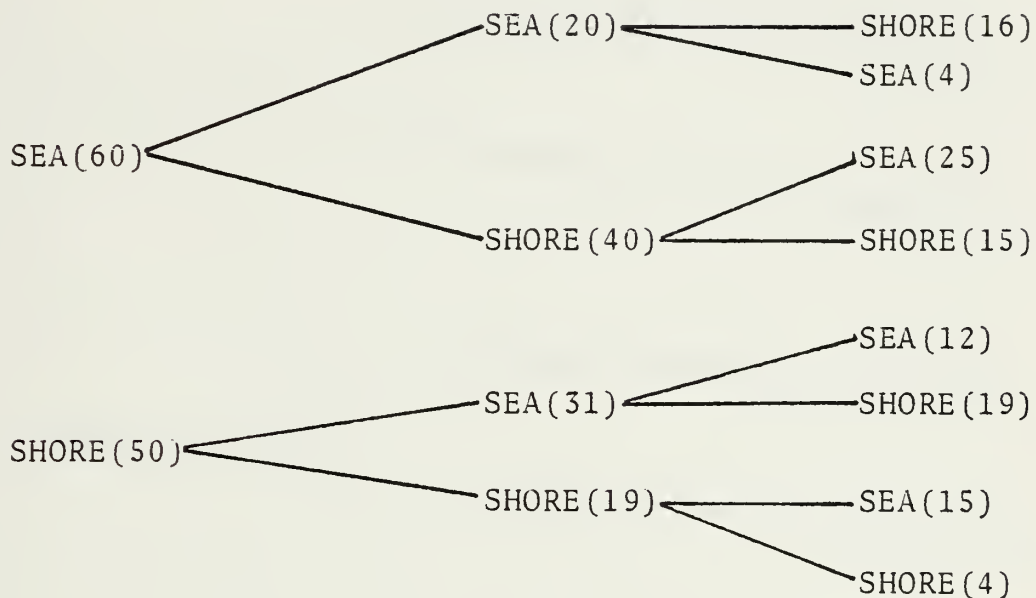


Figure 16. Career paths to selection for "early" selectees when expanding the aggregation to two billet categories (SEA/SHORE) (N = 110). Sum of the branches will not always equal their source for reasons described in Figure 11.



TOUR AT 11.5 YRS SERVICE

PRIOR TOUR 1

PRIOR TOUR 2

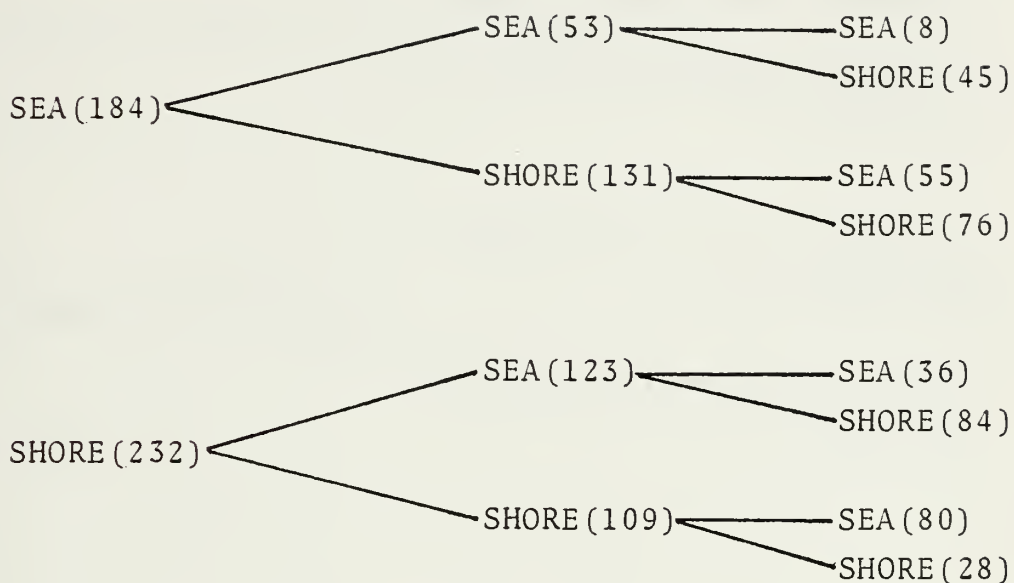


Figure 17. Career paths to 11.5 years of service for "due course" selectees when expanding the aggregation to two billet categories (SEA/SHORE) (N = 416). Sum of the branches will not always equal their source for reasons described in Figure 11.





TOUR AT 11.5 YRS SERVICE

PRIOR TOUR 1

PRIOR TOUR 2

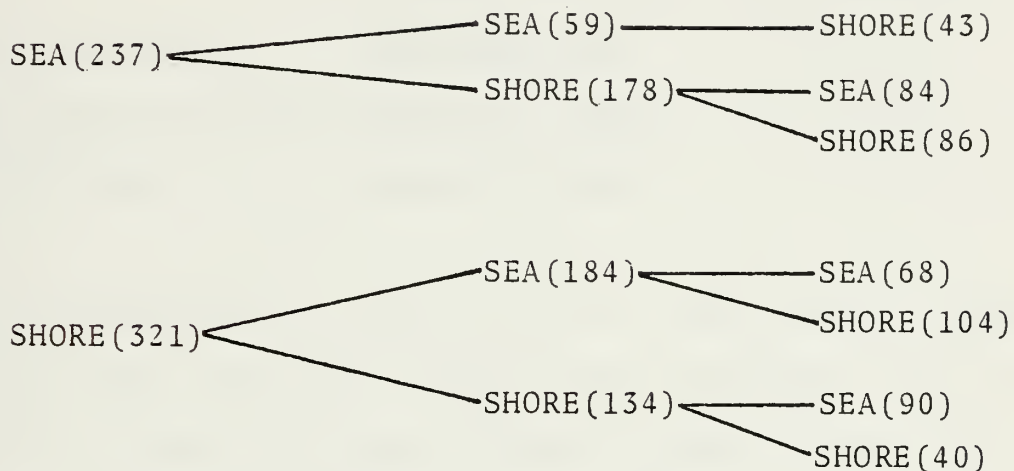


Figure 18. Career paths to 11.5 years of service for nonselectees when expanding the aggregation to two billet categories (SEA/SHORE) (N = 558). Sum of the branches will not always equal their source for reasons described in Figure 11.



approximately the 7 to 11.5 year career points and their probability of occurrence are as follows:

	<u>Path to 11.5 Year Point</u>	<u>Probability of Occurrence</u>
"Early" Selectees	SEA→SHORE→SEA	.23
"Due Course" Selectees	SHORE→SEA→SHORE	.20
Nonselectees	SHORE→SEA→SHORE	.19

Figure 19 depicts the career paths of "due course" selectees leading to their point of selection when extending back two tours prior. Figure 20 shows a similar career segment for nonselectees. The resulting modal paths from approximately the 11 to 15 year career points and their probability of occurrence are as follows:

	<u>Path to 15 Year Point</u>	<u>Probability of Occurrence</u>
"Due Course" Selectees	SHORE→SEA→SHORE	.25
Nonselectees	SHORE→SEA→SHORE	.28

As one might expect with such an expanded aggregation, there was less dispersion and a corresponding increase in the probability of any one of these dichotomous paths occurring. Despite this, however, the emergence of any one clear path for any of these groups is still lacking.

Thus, in examining the progression of over 1,000 careers in this study a wide variety of billet sequences were



TOUR AT SELECTION POINT  
(Average length of  
service = 15 years)

PRIOR TOUR 1

PRIOR TOUR 2

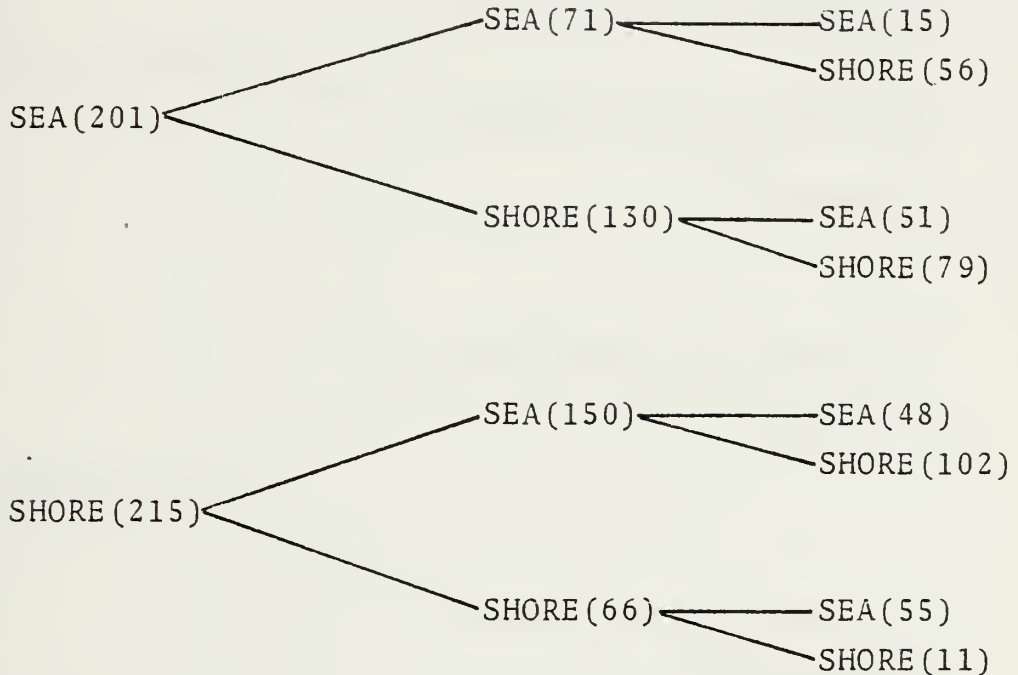


Figure 19. Career paths to selection for "due course" selectees when expanding the aggregation to two billet categories (SEA/SHORE) (N = 416). Sum of the branches will not always equal their source for reasons described in Figure 11.



TOUR AT 15 YRS SERVICE

PRIOR TOUR 1

PRIOR TOUR 2

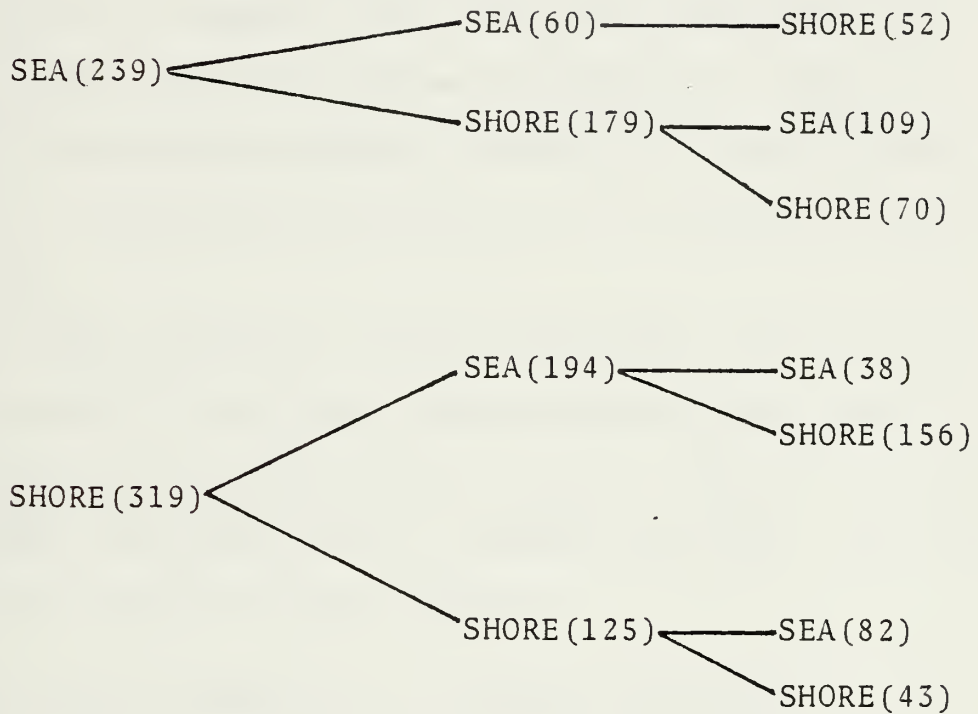


Figure 20. Career paths to 15 years of service for non-selectees when expanding the aggregation to two billet categories (SEA/SHORE) (N = 558). Sum of the branches will not always equal their source for reasons described in Figure 11.





encountered which tends to confirm what is stressed in the Unrestricted Line Officer Career Guidebook [1979] regarding the absence of any absolute path to "success." Additionally, and to the extent that "nonsuccess" may be interpreted as nonselection to command, this study has demonstrated the absence of any absolute path to "nonsuccess." Hence, no singular career path sequence was found that particularly enhanced or degraded the probability of selection or non-selection.

There were, however, certain individual billet types, combinations of billets and commissioning sources which, if experienced by a Surface Warfare Officer, tended to increase or decrease his probability of command selection. The next section will discuss these findings.

#### C. CONDITIONAL PROBABILITY OF COMMAND SELECTION

This phase of the research examined the conditional probability of command selection, given the occurrence or non-occurrence of various:

- (1) commissioning sources,
- (2) individual billet categories, and
- (3) combinations of 2 and 3 billet categories, with source of commissioning being considered one of the categories.

As stated in a previous section, the overall, or unconditional, probability of selection to command was computed to be .40.

This means that each officer in year groups '58 - '63 who remained on active duty to a point of eligibility for command



screening had four chances in ten of being selected, without regard to any additional information about his professional development. This section of the study interjects some of this developmental data to see how the probability of command selection is affected by it. Hence, the resulting probability of selection is now contingent, or conditional, upon the occurrence or nonoccurrence of specified developmental criteria.

As background information and in order to gain a more complete understanding of the impact of individual billet types on command selection, Table B-1 in Appendix B presents the joint probability of occurrence of various billet types and command selection outcome. Table B-2 provides similar joint probability data for commissioning sources and command selection outcome, while Tables B-3 and B-4 provide these data for various billet combinations and command selection outcome.

Table V presents the relative impact of various individual billet categories on command selection. The overwhelming importance of the executive officer (H) billet is quite evident. The data indicate that completion of the H tour enhances the probability of selection by some 12% (.52 - .40), but that noncompletion of this tour degrades the probability of selection by 22%. This finding tends to confirm the folklore regarding the relative importance of the XO tour to command selection.



TABLE V

Conditional Probability of Selection Given the Occurrence  
or Nonoccurrence of Various Billet Types\*

Billet Type	Occurrence		Ratio of Col.2 to Col.3
	With	Without	
H (XO)	.52	.18	2.89
T (PROF TRNG)	.49	.33	1.48
C (GRAD ED)	.48	.34	1.41
P (POST DEPT HD)	.44	.37	1.19
-----			
K (LATE XO)	.39	.40	.98
B (PRE DEPT HD)	.38	.40	.95
Q (NON DEPT HD)	.37	.40	.93
D (DEPT HD)	.38	.44	.86
I (POST XO)	.35	.41	.85
-----			
F (CONUS SHR)	.37	.47	.79
S (SUB UTIL)	.33	.47	.70
E (2ND DEPT HD)	.27	.44	.61
O (OSEAS SHR)	.29	.50	.58
G (NON XO)	.05	.45	.11

\* Unconditional probability of selection is .40.



Other billets which have a decidedly positive impact on the probability of command selection include the PROF TRNG (T), GRAD ED (C), and POST DEPT HD (P) tours. This is consistent with data presented earlier regarding the relative frequency with which these tours appear in the careers of selectees and nonselectees. Those individual billets which appear to have a somewhat neutral effect on selection include the LATE XO (K), PRE DEPT HD (B), NON DEPT HD (Q), DEPT HD (D), and POST XO (I) tours. It is interesting to note that according to these data, having a late XO tour neither helps nor hurts an officer's probability for command selection.

Those billets which if experienced tend to degrade one's probability of command selection include CONUS SHR (F), SUB UTIL (S), 2ND DEPT HD (E), OSEAS SHR (O), and NON XO (G). The F, S, and O tours were often shore tours in lieu of CO/XO tours among nonselectees and, as a result, their inclusion in this listing is not surprising. The E tour's inclusion in this list confirms what was noted earlier in Figure 5, and the importance of the XO tour (H) is further emphasized by the position of the NON XO tour (G) in Table V.

As depicted earlier in Figures 7 and 8, OCS was the most prevalent source of these officers. Table VI presents the relative impact of various commissioning sources on command selection and tends to confirm popularly held notions regarding the career success of officers from them.

As stated earlier, a computer search of the data was performed to detect and count all possible combinations of two





TABLE VI

Conditional Probability of Selection Given the Occurrence  
or Nonoccurrence of Particular Commissioning Sources\*

Commissioning Source	Occurrence		Ratio of Col. 2 to Col. 3
	With	Without	
USNA	.49	.36	1.36
NROTC	.41	.40	1.03
OCS	.35	.44	.80
OTHER	.35	.41	.85

\* Unconditional probability of selection is .40.

and three billet categories. Those which were most prevalent or which appeared to have strong potential for affecting selection were examined to determine what impact they had on the probability of command selection. Tables VII and VIII present these findings and tend to further confirm the significance of the XO tour to command selection as each combination which serves to increase the probability of selection has within it billet code H. Likewise, those combinations containing billet codes F, S, E, and O without the presence of H, had consistently negative effects on the probability of command selection.



TABLE VII

Conditional Probability of Selection Given the Occurrence  
or Nonoccurrence of Various Two-Billet Combinations\*

Billet Combination (order does not matter)	Occurrence		Ratio of Col. 2 to Col. 3
	With	Without	
HT (XO, PROF TRNG)	.55	.32	1.72
HC (XO, GRAD ED)	.54	.33	1.64
HP (XO, POST DEPT HD)	.54	.34	1.59
FH (CONUS SHR, XO)	.50	.32	1.56
DH (DEPT HD, XO)	.50	.33	1.52
HS (XO, SUB UTIL)	.48	.36	1.33
DF (DEPT HD, CONUS SHR)	.36	.43	.84
DS (DEPT HD, SUB UTIL)	.30	.45	.67
FF (CONUS SHR, CONUS SHR)	.26	.48	.54
FO (CONUS SHR, OSEAS SHR)	.25	.48	.52
EF (2ND DEPT HD, CONUS SHR)	.22	.43	.51
OS (OSEAS SHR, SUB UTIL)	.23	.45	.51
SS (SUB UTIL, SUB UTIL)	.21	.46	.46

\* Unconditional probability of selection is .40.



TABLE VIII

Conditional Probability of Selection Given the  
Occurrence or Nonoccurrence of Various Three-  
Billet (and Commissioning Source) Combinations\*

Billet Combination** (Order does not matter)	Occurrence		Ratio of Col. 2 to Col. 3
	With	Without	
HC, USNA	.61	.37	1.65
HTC	.58	.37	1.57
FHT	.55	.35	1.57
DHT	.54	.36	1.50
DFH	.50	.36	1.39
-----			
FFD	.25	.45	.56
DFS	.24	.44	.55
DFO	.24	.45	.53
SFO	.19	.43	.44
SSC	.19	.44	.43
SSD	.18	.43	.42
FFF	.17	.44	.39
FFO	.17	.45	.38
EFO	.14	.42	.33

\* Unconditional probability of selection is .40.

\*\* See Figure 2, page 21, for billet code definitions.



In considering the two-billet combinations presented in Table VII, it is interesting to note the effect of various tour types acting in combination with the XO tour. When an officer had an XO tour without regard to other tours with which it was combined, his probability of command selection increased from the nominal .40 to .52. However, when this tour was combined with SUB UTIL (S), DEPT HD (D), or CONUS SHR (F) tours, this advantage was slightly reduced, and when combined with PROF TRNG (T), GRAD ED (C), or POST DEPT HD (P) tours, the advantage was slightly increased. These combined effects are consistent with the individual effects of various billet types shown in Table V.

The billet combinations in Table VIII provide additional insight into the relative effects of various billet types on the probability of command selection. Particularly noteworthy is the distinction between those three-billet combinations that include an XO tour and those that do not. Among those with the XO tour, that which contains GRAD ED (C) and a source of commissioning of USNA has historically served to enhance the probability of selection more than any other. That which includes PROF TRNG (T) and GRAD ED (C) with the XO tour has had a positive influence almost equally as strong.

It might be noted that lacking any of these combinations which include an XO tour does relatively little to degrade the probability of selection. This is so because lacking these combinations does not necessarily negate the possibility





of having an XO tour, which has been shown to be the single most significant predictor of command selection.



## V. DISCUSSION

This study has examined the career progressions of a large number of Surface Warfare Officers to determine what kinds of characteristics, apart from performance, distinguished the careers of those selected to commander-level command from those who were not. Fundamental to the study was the question of career development opportunity. Specifically, were those who did not ultimately reach commander-level command provided with an opportunity for professional growth equal to those who did?

To investigate this question, data were collected on the kinds of billets held at varying career points by selectees and nonselectees. From this, evidence was presented showing that roughly equal numbers of both groups were assigned to a department head tour. Since this tour is conceived to be more fundamental to the early professional development that leads to command than any other single tour type, this finding is noteworthy. Additionally, both selectees and nonselectees were found to have spent approximately the same amount of time at sea up to the point where selectees actually served in their command tour. Once again, this is noteworthy because command qualification can only come about through the acquisition of operational skills gained through sea duty experience. Thus, the opportunity for professional growth appears to have



been presented uniformly to this sample of Surface Warfare Officers.

In continuing to search for those characteristics which distinguish the careers of selectees from nonselectees, the billet sequences of both groups were examined to see if either had tendencies to follow a common and, therefore, predictable path. In this analysis, the paths of "early" and "due course" selectees and nonselectees leading to various points in their careers were studied. When it became evident that no common path for any group would emerge with significance using the original 17 billet categories, these categories were compressed into four, and then later into two categories. Even when aggregating billet types in this manner, the probability of a common sequence of only three billets was found to be less than 30% with no singular path of significance emerging. Hence, this phase of the study confirmed that common billet sequences for any significant career segment of selectees and nonselectees simply do not exist.

Perhaps the most enlightening phase of this research was the determination of the historical significance of certain billet types and combinations of billets to command selection. Through a conditional probability analysis, the tremendous importance of the lieutenant commander XO tour in particular was documented. Simply stated, career paths that included this tour more often than not led to command selection, whereas those which did not had a considerably lower probability of such later success.



Tours which were found to strongly complement the XO tour in the developmental process leading to command for Surface Warfare Officers, and which in themselves served to enhance the probability of selection, were the education-related tours, namely professional training (T) and graduate-level education (C). These assignments, like the XO tour, come about as a result of board action and, therefore, are based largely on performance criteria and the perceived potential for further professional growth.

To the extent that these criteria represent valid measurements of the growth potential of officers, the assignments resulting therefrom are indeed consistent with the policy of "good people getting the good jobs" (i.e., those that enhance the probability of command selection). However, to the extent that these criteria represent imperfect predictors, board action and the resulting assignment process can exert considerable influence beyond the control of the individual officers whose career destinies are being determined. Therefore, selection boards and assignment officers must be mindful of the probable career impacts which may result from judgments within their discretion. The conditional probability analysis of this research represents one approach to quantifying the relative impacts of various assignments on the careers of Surface Warfare Officers and may prove useful in the deliberations of career planners and assignment officers.

Once again, however, the performance-assignment conundrum arises with respect to the XO tour. Is it that only officers





who are most likely going on to CO tours anyway (as a result of prior performance) get an XO tour; or is it that the XO experience itself serves to particularly qualify one for later command selection? In practical terms, of course, both of these dynamics must interact as the XO tour has traditionally served to both reward an officer for his prior performance and to provide him with the kinds of challenging experiences necessary for his continued professional growth. Hence, the results of the conditional probability analysis relative to the XO tour must be understood in this light.

This study has focused on the career development process leading to commander-level command since this is the primary goal of every aspiring Surface Warfare Officer and the channel through which greater responsibility is attained. However, in a closed, hierarchical personnel system such as the Navy's where command opportunity is limited, it remains that a majority of Surface Warfare Officers will not reach this goal. Hence, any management process which attempts to suboptimize careers in this manner is not meeting the total needs of the organization. In recognition of this and in an effort to more effectively manage officer personnel assets, the concept of the Unrestricted Line Officer Professional Development System (OTMS) has evolved. Essentially, this system seeks to strike a balance between the operational and subspecialty development of officers in order to meet total Navy requirements. The findings of this study with respect to subspecialty utilization



lend support to the efficacy of OTMS. In particular, the heavy concentration of utilization tours for nonselectees near their 17 year career point speaks well of the system that (1) enabled the development of these subspecialties and (2) assigned officers into tours utilizing these skills.



## VI. CONCLUSIONS

This study generally supports the popular beliefs about what career characteristics drive command selection. General conclusions that may be drawn from this research include the following:

- A wide variety of career development opportunities have been provided to Surface Warfare Officers to enable them to qualify for commander command selection.
- There is no evidence of any absolute path to command selection, nor one which consistently leads to non-selection.
- Completion of an executive officer tour (H) is virtually essential for the Surface Warfare Officer to remain competitive for command selection.
- Completion of graduate-level education (C) and professional training (T) enhance the probability of command selection.
- Surface Warfare Officers who were Naval Academy graduates had on average a higher probability of ultimate command selection than those who were not.
- Tours ashore, including subspecialty utilization (S), when served to the exclusion of essential sea tours, reduce the probability of command selection.
- Combinations of tours (and commissioning source) in the careers of Surface Warfare Officers which most decidedly enhanced the probability of command selection are: (order within a combination does not matter)
  - USNA, graduate education, XO tour
  - Graduate education, XO tour, professional training
  - XO tour, professional training, ashore CONUS
- Combinations of tours in the careers of Surface Warfare Officers which most decidedly degraded the probability of command selection are: (order within a combination does not matter)



- Second department head tour, ashore CONUS, ashore overseas
- Ashore CONUS, ashore CONUS, ashore overseas
- Ashore CONUS, ashore CONUS, ashore CONUS.

Nothing in this study has refuted the underlying importance of performance to career success. However, in the absence of performance data, this research has documented the relative importance of certain career experiences as they affect professional development and the likelihood of command selection for Surface Warfare Officers.





## APPENDIX A

### BILLET CODING PROCEDURES

In individually coding the billets comprising the over 1,000 careers in this research, the need for developing a systematic and consistent approach to assigning billet categories was essential. Accordingly, billet categories and their definitions had to be established, and guidelines adopted for resolving conflicts and filling gaps in the data. This appendix presents those categories together with their associated codes and definitions, and the guidelines adopted to apply these codes to the career paths of the sample. Additionally, two examples of actual cases are presented to illustrate the billet coding procedure. First, however, the origins of the data used in this study will be outlined and briefly discussed.

#### Data Sources

Data for this research came from the Officer Master File (OMF) and were current through November 1979. Additional updated subspecialty utilization data were obtained in April 1980 and were current through that date. In order to interpret the OMF coded data, the U.S. Navy publication, Manual of Navy Officer Manpower and Personnel Classifications (NAVPERS 15839D), Volumes I and II [1978] was used extensively. The specific data fields extracted from the OMF included:



## APPENDIX A (Continued)

- Present grade (one-character alpha code indicating present rank)
- Year group (two-digit code which generally indicates the fiscal year of commissioning)
- Designator (four-digit code used to identify the primary naval specialty qualifications of an officer)
- Source code (three-digit code indicating the commissioning source of an officer)
- Active commissioning base date (ACBD) (date computed to the day to represent the date when all active commissioned service would have begun if it were continuous to the present)
- Command and operational screen results (a five-position alpha-numeric code assigned to officers who have been selected by a Command or Operational Screening Board; the code describes the fiscal year considered and type of command for which selected)
- Promotion history (dates officer was promoted to various grades extending from warrant through flag rank)
- College name, education duration and year completed
- Subspecialty (a five-character code indicating an officer's subspecialty career field and education or skill area)
- Subspecialty utilization (various one-character codes indicating whether or not a subspecialty was used in a particular job)
- Service schools, duration and completion dates (schools are represented by three-digit codes)
- Navy Officer Billet Classification (NOBC) (four-digit code which identifies a group of officer billets which are similar but not necessarily identical in scope and nature of duties)
- Ship/station codes (SSC) (three-character numerical-alpha code identifying the type of ship or station to which an officer is assigned)
- Billet history, with inclusive dates at each station (a listing of a maximum of 8 NOBC's per career).



Billet Codes and Categories

From these data fields, career paths were individually reconstructed. However, since the NOBC's often failed to adequately discriminate among billet types for purposes of this study, a separate categorization and coding scheme was necessary in order to permit more meaningful billet distinctions. The 17 billet categories, their codes and definitions which were subsequently established and used in this research are listed below:

B	Pre-Department Head
D	Department Head
Q	Non-Department Head
P	Post-Department Head
E	Second Department Head
H	Executive Officer (XO)
G	Non-XO
I	Post-XO
K	Late XO
J	Commanding Officer (CO)
N	Non-CO
L	Post-CO
T	Professional Training
C	Pursuing Graduate-Level Education
S	Subspecialty Utilization
O	Ashore, overseas
F	Ashore, CONUS



APPENDIX A (Continued)

Billet Category Definitions

Sea Tours

1. Pre-Department Head Tour (B) - Any sea tour occurring prior to the Department Head (D) tour in which the incumbent is no more senior than a mid-grade lieutenant (03).
2. Department Head Tour (D) - A tour of duty where the incumbent serves as head of a department of an afloat unit, while in paygrade 03 or junior 04 (i.e., the tour starts within three years of promotion to 04). If this tour occurs before paygrade 03, it may be counted as "D" provided that billet is normally occupied by an 03.
3. Non-Department Head Tour (Q) - Any afloat tour completed by a mid-grade 03 to mid-grade 04 (i.e., the tour starts within four years of promotion to 04) which is not a "D" tour, nor included in any other sea tour category described herein. "Q" codes will not be assigned once a "D" tour has been completed.
4. Post-Department Head Tour (P) - Any afloat tour following (immediately or otherwise) the "D" tour which is neither a department head tour nor included in any other sea tour category described herein. This classification generally includes senior 03's and is extended to include 04's when the tour in question starts within four years of promotion to 04. Examples of such tours include CO/XO of small





## APPENDIX A (Continued)

units (other than XO (H) equivalency CO tours, described below), Main Propulsion Assistant/Damage Control Assistant on aircraft carriers, duty on afloat staffs, etc.

5. Second Department Head Tour (E) - Any department head tour following (immediately or otherwise) a "D" or another "E" tour. To be so classified, the tour must commence within four years of promotion to 04. "E" tours will never follow XO (H) tours.
6. XO Tour (H) - A tour of duty in which the incumbent serves as executive officer of an afloat unit, while in paygrade 04. This classification is extended to include non "E", post-department head tours completed by nuclear qualified Surface Warfare Officers when such tours fulfill the career requirements of the "H" tour. Additionally, this classification includes certain lieutenant commander CO tours which are considered to be the equivalent of an "H" tour (e.g., CO of PHM, ARS, ATS and, in some cases, FF ship types).
7. Non-XO Tour (G) - A tour of duty afloat which is completed by a senior 04 (more than four years in grade) to mid-grade 05 (less than three years in grade) which neither is nor follows a commanding officer (J) or executive officer (H) tour.



## APPENDIX A (Continued)

8. Post-XO Tour (I) - A non-commanding officer (J) tour of duty afloat following (immediately or otherwise) an "H" tour. This classification generally includes senior 04's to mid-grade 05's.
9. Late XO Tour (K) - An afloat tour of duty in which the incumbent serves as executive officer while in paygrade 05. If such a tour follows an "H" tour, it will be classified as a post-XO (I) tour.
10. CO Tour (J) - A tour of duty where the incumbent serves as commanding officer of an afloat unit, while in paygrade 05. If a CO tour occurs before 05, it may be counted as "J" provided that billet is normally occupied by an 05.
11. Non-CO Tour (N) - An afloat tour of duty served while in paygrade 05 which is neither a "J", "H", nor "K" tour; nor one which follows a "J" or "H" tour.
12. Post-CO Tour (L) - A non-commanding officer tour of duty afloat following (immediately or otherwise) a "J" tour. This classification generally includes mid-grade to senior 05's and junior 06's.

### Shore Tours

1. Professional Training (T) - A tour in which training is undertaken of twenty weeks duration or more which is designed to broaden the career as opposed to specific preparation for the next tour of duty. Examples of such



tours include training at the Surface Warfare Officers School Command (Department Head Course), Armed Forces Staff College, and the Naval War College.

2. Pursuing Graduate-Level Education (C) - A tour of duty in which graduate education is undertaken leading to a subspecialty.
3. Subspecialty Utilization (S) - A tour of duty ashore in which the incumbent's subspecialty was used. This subspecialty may either be the result of graduate education or significant experience. Such a tour would lead to the designation "proven subspecialist."
4. Ashore, Overseas (O) - A shore tour served outside the continental United States (CONUS) not meeting any of the above criteria.
5. Ashore, CONUS (F) - A shore tour served within CONUS not meeting any of the above criteria. This classification also includes any periods of inactive duty.

#### Billet Coding Guidelines

The guidelines developed for assigning the above categories, resolving conflicts and filling gaps in the data are outlined below:

1. In order to count as a tour of duty, the incumbent must have held the billet in question for a period of 6 months or more.



2. If the 5 and 17 year career points could not be determined, the case would not be used.

3. Unexplained gaps in the billet histories of officers appeared to occur randomly in the data. When encountered, they were treated thusly:

a. If the gap were less than 6 months, the case would be retained with the period of time being attributed to normal enroute delays between duty stations. (Roughly 5% of the cases in this study had gaps that exceeded 3 months but were less than 6 months.)

b. If the gap were more than 6 months but less than one year, the case was retained but the period under consideration was assigned the billet code "F" (Ashore, CONUS). This code was selected because such a break in the record was most likely to have consisted of brief periods of temporary duty ashore such as schools not recorded in the OMF, hospitalization, etc. (Again, about 5% of the cases in this study contained such gaps.)

c. If the gap exceeded one year, the case was not used.

4. If there were no firm indication in a particular career of the presence or absence of a department head tour, the case would not be used.

5. Sea tours always took coding precedence over subspecialty utilization (S) in cases where the two occurred together.





6. Subspecialty utilization (S) always took coding precedence over ashore, overseas (O) tours in cases where the two occurred together.

7. In cases where an officer has a subspecialty, subspecialty utilization codes are assigned for each duty station listed in the billet history. In determining whether or not a subspecialty was utilized and thus causing the assignment of "S" to be made to a particular tour, Volume II of NAVPERS 15839D and Naval Military Personnel Command (Distribution) Instruction 5400.1F were consulted. From these sources the one-character subspecialty utilization codes used in the OMF could be interpreted. Those OMF codes which resulted in the assignment of "S" to a particular tour of duty in this study included:

<u>OMF Code</u>	<u>Situation used in OMF</u>
D	Billet requires graduate education in same education field as the officer's education.
E	Billet requires graduate education in field closely related to the officer's education.
G	Related assignment utilizing officer's subspecialty in subspecialty billet not requiring graduate education.
H	Related assignment utilizing officer's subspecialty in a billet that is not subspecialty coded.
J	Officer has more than one subspecialty code and higher priority exists for utilization of subspecialty 2 or 3.
M	Officer without graduate education will be utilizing subspecialty.



## APPENDIX A (Continued)

8. In determining whether an XO tour should be classified as "H" or "K" when the rank of the incumbent changes from 04 to 05 during that tour, the following rule was applied:

If the incumbent completes 25% or more of the tour before being promoted to 05, it is classified as "H"; otherwise it is classified as "K".

9. For coding purposes, graduate education (C) tours were not permitted to exceed three years in length. If graduate education was being pursued for increments longer than this, an additional "C" was assigned.

10. If officers were in transit at their 5 and/or 17 year career points, the first and/or last tour recorded would be the nearest complete tour(s) within the 5-17 year segment.

11. Since tour commencement and completion dates were given by year and month only, both were assumed to have occurred on the first of the month.

### Examples

The first of two examples shows the actual data and procedures used to code the billets comprising the career of a selectee from the 5 to the 17 year points. Figure A-1 pertains. The second example shows the same for a nonselectee case. Figure A-2 pertains. Both figures depict common data fields which were used in the billet coding process.

The data fields of primary use during the coding process were those shown beneath the heading "billet history." For ease in reading these fields, the NOBC's and SSC's align with



each other, one for one, as do the duty stations and inclusive dates. Additionally, the subspecialty utilization codes match one for one with the duty stations when reading the former left to right and the latter top to bottom. The other fields shown in the figures were necessary to provide amplifying information and to assist in filling in any gaps in the billet histories.

Prior to any billet coding, certain basic considerations common to each case had to be made to determine if the case could be used. These were:

- Could the 5 and 17 year career points be determined when measuring from the active commissioning base dates (ACBD's)?
- Was the billet history free of any gaps that exceeded 6 months? If not, could the gaps be adequately filled?
- Could the existence or nonexistence of a department head tour be determined?

If the answer to each of these questions was yes, then the case could be used; otherwise, it was dropped due to insufficient data. During the billet coding process, Volumes I and II of NAVPERS 15839D were used as the basic references for interpreting the various OMF codes appearing in the data.

#### Example 1 (selectee)

In reviewing the above basic considerations for this particular case, the following observations were made:

1. While it is not readily apparent from the available data, both the 5 and 17 year points could be determined. As measured from the ACBD, the 5 year point occurred in June



## APPENDIX A (Continued)

1968 during an apparent gap in the billet history, and the 17 year point (was to have) occurred in June 1980, some 22 months after commencement of the LSD 36 tour. A closer inspection of the data (subspecialty field), however, indicates that the apparent gap was actually an educational tour in which graduate-level education was being undertaken (C) tour. Similarly, the 17 year point could be accounted for since the LSD 36 tour started in August 1978 and the length of that particular tour type is rather well established at 24 months. Thus, it is reasonably safe to assume that he would have still been in that tour at his 17 year career point.

2. Although two gaps exceeding 6 months' duration existed in the billet history (6801-7006 and 7507-7610), both could be accounted for by referencing additional data.

3. The existence of a department head tour could be determined. This tour was completed prior to the 5 year career point while serving in DE 1036 as Operations Officer (NOBC 9274) and occurred immediately after completing what is now called the Surface Warfare Officer Department Head Course (school code 380).

With these three basic considerations satisfied, it was determined that the billet history was sufficiently complete so that the case could be used. A broad overview of the general data pertinent to coding the case reveals that this particular officer:

- (1) was presently a commander (CDR);
- (2) was in year group 62;





APPENDIX A (Continued)

- (3) had USNA as his commissioning source;
- (4) had an ACBD of 5 June 1963;
- (5) had been screened and selected in fiscal year 1978 for commander command of a surface unit;
- (6) was promoted to various ranks on dates as shown:

(01)	ENS	630605
(02)	LTJG	641205
(03)	LT	661201
(04)	LCDR	700201
(05)	CDR	771101

- (7) had four service schools recorded, one of which occurred during the 5 to 17 year segment that exceeded 20 weeks duration (school code 414);
- (8) had a proven subspecialty in operations analysis based on a master's level of education;
- (9) had utilized that subspecialty while assigned at his third listed duty station (OPERSTUDYGRP DC).

Armed with this general background information, the actual billet coding process could begin. As previously noted, the 5 year point occurred during a tour in which graduate-level education was being pursued, and thus resulted in the billet code assignment "C".

Upon obtaining his degree, this officer returned to sea as commanding officer (NOBC 9222) of a small surface unit, MSO 433. Based on the criteria for such a tour, this billet was classified as a post-department head tour, and assigned the code "P".

Following this tour, the operations analysis subspecialty was utilized while assigned to the Operations Study Group in Washington, D.C. Utilization was determined by virtue of the assignment in the data of the utilization code D to this



## APPENDIX A (Continued)

duty station, and resulted in this tour being assigned billet code "S".

After the Washington tour, the second of two gaps appeared in the billet history. As before, this gap resulted from an educational tour; this time professional education. An inspection of the service school field shows that during the period in question, this officer was attending the Naval War College (school code 414). Accordingly, the tour was coded "T".

The following tour was back at sea as Executive Officer of LKA 114. Because over 25% of this tour was completed in the grade of 04 before being promoted to 05, it was assigned the billet code "H". Since command selection occurs early in the fiscal year (FY) and since this officer was selected in FY 1978, his actual timing of selection can be estimated at about October 1977. Hence, it was during this executive officer tour that he was selected for command.

Following the executive officer tour, this officer remained at sea, transferring to LSD 36 where he served as Commanding Officer and where the 17 year point in his career occurred. This tour was coded as "J".

The resulting sequence of billet codes from the 5 to 17 year points for this career was:

PT5	PT4	PT3	PT2	PT1	Tour at 17 Year Point
C	P	S	T	H	J
				Selection Point	
				(SPOINT = 2)	



## APPENDIX A (Continued)

### Example 2 (nonselectee)

In reviewing the three basic considerations for this case:

1. Both the 5 and 17 year career points could be determined.
2. No gaps of over 6 months existed in the billet history.
3. While not readily apparent, the existence of a department head tour could be determined. This tour was apparently completed prior to the 5 year career point while serving in DD 853. Such determination was made based on the completion of Surface Warfare Officer Department Head Course (school code 380) immediately prior to reporting aboard DD 853.

A broad overview of the general data pertinent to coding the case shows that this particular officer:

- (1) was presently in the grade of CDR;
- (2) was in year group 61;
- (3) had USNA as his commissioning source;
- (4) had an ACBD of 7 June 1961;
- (5) had been screened and selected in fiscal year 1975 for commander-level XO of a surface unit (but not for command);
- (6) was promoted to various ranks on dates as shown:

(01)	ENS	610607
(02)	LTJG	621207
(03)	LT	650301
(04)	LCDR	690701
(05)	CDR	760901

- (7) the one service school recorded was of interest but was not directly relevant to the coding process since it occurred outside the 5 to 17 year career segment;



## APPENDIX A (Continued)

- (8) had a proven subspecialty in financial management based on significant experience;
- (9) had utilized that subspecialty in his most recent tour and three tours prior to that.

The 5 year point of this career occurred during the tour on MSO 493, so the billet coding begins at this point and continues up to the OPNAV tour, during which the 17 year career point was reached. Although no NOBC was available in the data to describe the billet held on MSO 493, it was obviously a sea tour which followed a department head tour, and one which was served while in the grade of 03. Judging from the ship type, it was unlikely that this was another department head tour; therefore, the only logical billet classification was the post-department head tour for which it was assigned the code "P".

The next tour was as an instructor (NOBC 3251) at the Naval Academy and, since no evidence existed to indicate that a subspecialty was used, the tour was simply classified as ashore, CONUS and assigned the billet code "F".

Following the instructor tour, this officer went back to sea aboard DLG 24, as the ship's Chief Engineer (NOBC 9369). Since this, in fact, was another department head tour, it was assigned the billet code "E".

The next tour was spent ashore at the Navy Recruiting Command in Washington, D.C. An examination of the subspecialty utilization field indicates that a subspecialty was used (utilization code M) during this tour, hence the assignment of billet code "S".





## APPENDIX A (Continued)

This utilization tour was followed by another sea tour-- this time as First Lieutenant aboard LPH 9. Once again, this was a department head tour, but because of the relatively late career timing at the commencement of the tour (over 4 years in the grade of 04), it was classified as a non-XO tour and assigned the billet code "G".

From LPH 9, this officer reported to LKA 113 for duty as Executive Officer. As with the previous example, because more than 25% of this tour was completed in the grade of 04 before being promoted to 05, it was assigned the billet code "H".

Following the executive officer tour, this officer returned ashore for duty in OPNAV, serving in a subspecialty utilization tour (utilization code M) during which the 17 year point in his career occurred.

The resulting sequence of billet codes from the 5 to 17 year points for this career was:

PT6	PT5	PT4	PT3	PT2	PT1	Tour at 17 Year Point
P	F	E	S	G	H	S



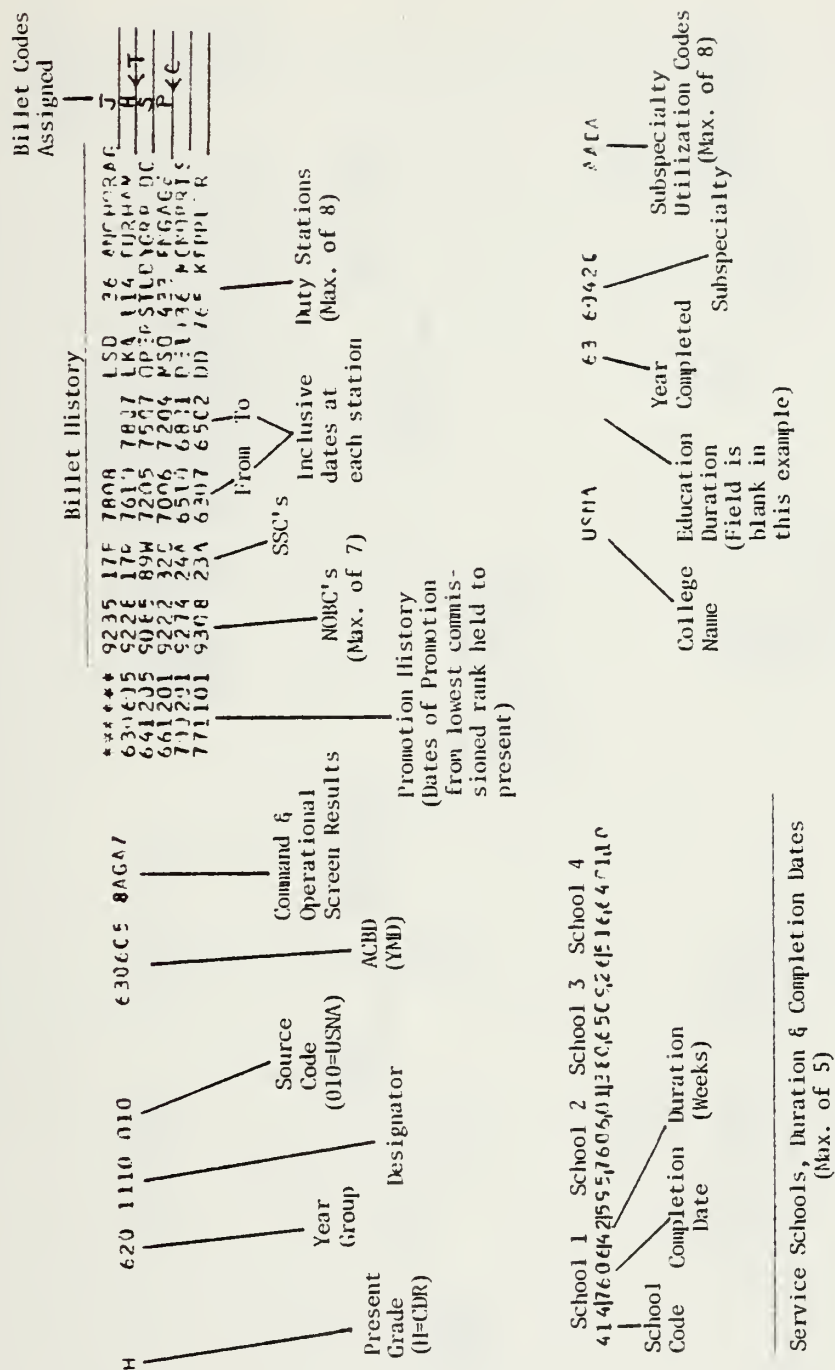


Figure A-1. An example of Officer Master File data and the resulting billet code assignments for a selectee case.



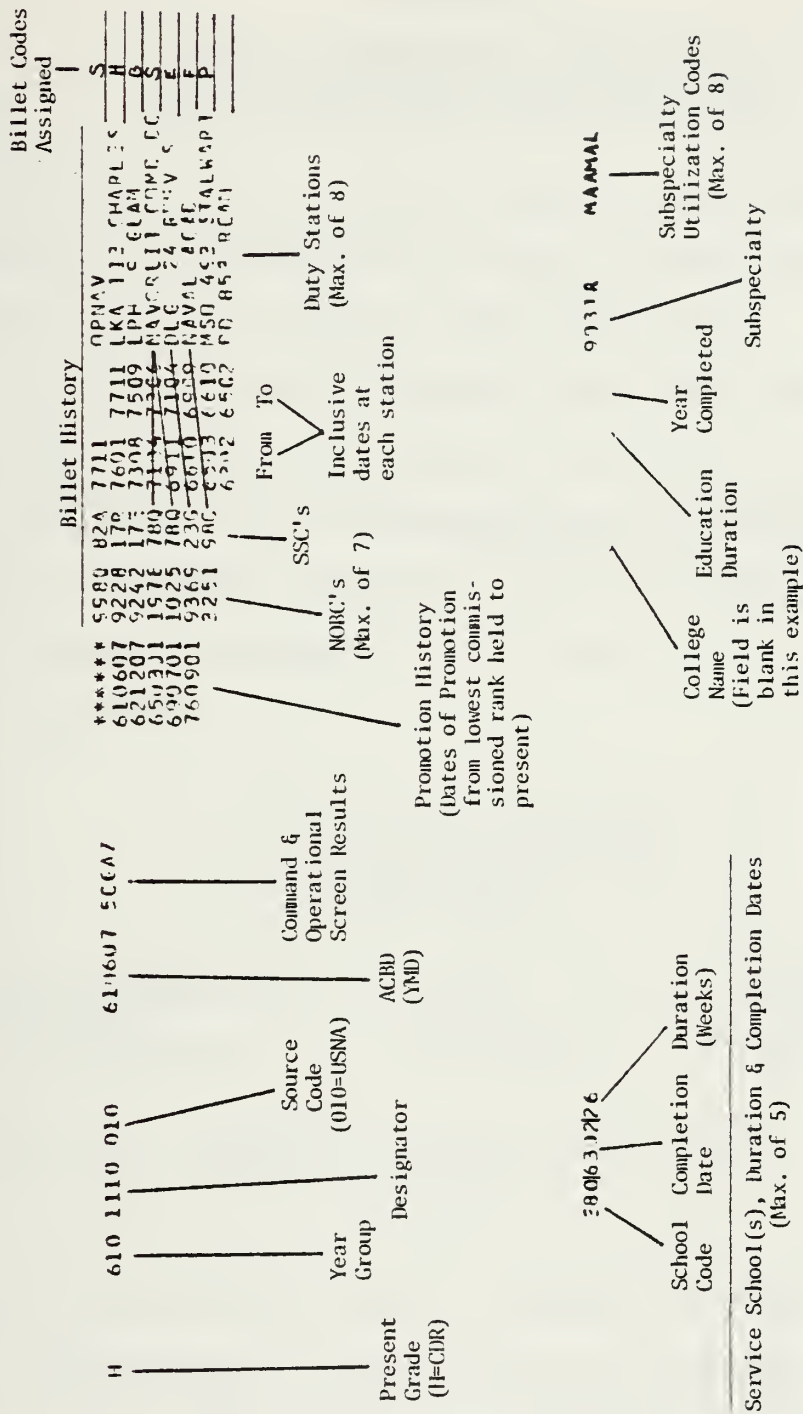


Figure A-2. An example of Officer Master File data and the resulting billet code assignments for a nonselectee case.



## APPENDIX B

### BAYES' THEOREM AND ASSOCIATED JOINT PROBABILITY CONSIDERATIONS

The application of Bayes' theorem and associated joint probability considerations in this research will be discussed briefly through an example using actual data. For a more detailed explanation of the theory upon which this discussion is based, the interested reader is referred to any basic text on probability, such as Introduction to Probability and Statistics by Lindgren, McElrath, and Berry [1978]. Figure B-1 shows a schematic presentation of what is accomplished through Bayes' analysis.

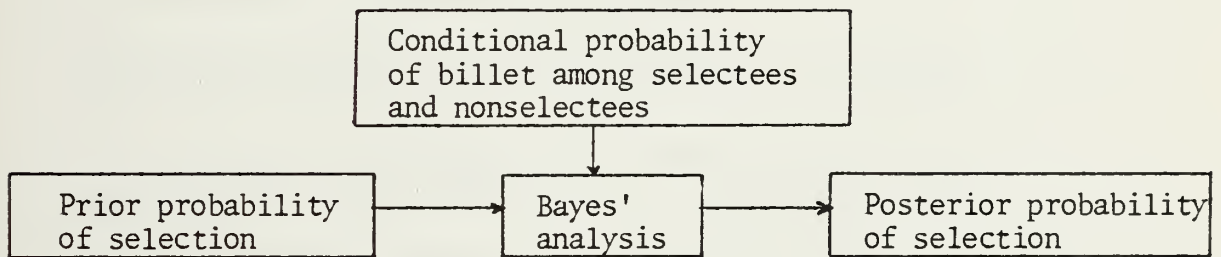


Figure B-1. Schematic presentation of the Bayes' analysis.

Here it can be seen that a revised, or posterior, estimate of the probability of selection can be obtained through the Bayes' analysis when certain additional information is introduced. As has been previously determined, the "prior" probability of selection is .40. The conditional probability of a





## APPENDIX B (Continued)

particular billet occurring among selectees, and nonselectees can also be obtained from the data, and is simply the ratio of the number of selectees and nonselectees having that billet to the total number of selectees and nonselectees respectively. Through the use of Bayes' theorem, the conditional probability of selection among those having that billet and those not having that billet can be determined.

The example to follow will compute the conditional probability of command selection among those having an executive officer (H) tour and among those not having this tour. In order to use Bayes' theorem for such a determination, the following must be known:

- probability of selection  $P(\text{Sel})$
- probability of nonselection  $P(\text{Sel}^C)$
- probability of an executive officer tour among selectees  $P(H/\text{Sel})$
- probability of an executive officer tour among nonselectees  $P(H/\text{Sel}^C)$ .

Applying Bayes' theorem to determine the probability of selection among those having an H tour gives the result:

$$\begin{aligned}
 P(\text{Sel}/H) &= \frac{P(H/\text{Sel}) P(\text{Sel})}{P(H/\text{Sel}) P(\text{Sel}) + P(H/\text{Sel}^C) P(\text{Sel}^C)} \\
 &= \frac{(.84) (.40)}{(.84) (.40) + (.53) (.60)} = \frac{.34}{.34 + .32} = .52
 \end{aligned}$$

Applying Bayes' theorem to determine the probability of selection among those not having an H tour gives the result:



$$\begin{aligned}
 P(\text{Sel}/H^C) &= \frac{P(H^C/\text{Sel}) P(\text{Sel})}{P(H^C/\text{Sel}) P(\text{Sel}) + P(H^C/\text{Sel}^C) P(\text{Sel}^C)} \\
 &= \frac{(.16) (.40)}{(.16) (.40) + (.47) (.60)} = \frac{.06}{.06 + .28} = .18
 \end{aligned}$$

The elements in Bayes' formula can also be readily determined through use of a "two-way" joint probability table, which has the added advantage of providing a more intuitive understanding of the results obtained through the Bayes' analysis. Such a table is shown below:

	Sel	Sel <sup>C</sup>	
H	.34	.32	.66
H <sup>C</sup>	.06	.28	.34
	.40	.60	1

Since the joint probability of H and Sel occurring equals  $P(H/\text{Sel})P(\text{Sel})$ , and since the joint probability of H and Sel<sup>C</sup> equals  $P(H/\text{Sel}^C)P(\text{Sel}^C)$ , all values needed to apply Bayes' theorem to obtain  $P(\text{Sel}/H)$  can be taken directly from the table. Similarly, since the joint probability of H<sup>C</sup> and Sel occurring equals  $P(H^C/\text{Sel})P(\text{Sel})$ , and since the joint probability of H<sup>C</sup> and Sel<sup>C</sup> equals  $P(H^C/\text{Sel}^C)P(\text{Sel}^C)$ , all values needed to apply Bayes' theorem to obtain  $P(\text{Sel}/H^C)$  can once again be taken directly from the table.

Tables B-1 through B-4 provide similar joint probability information as that contained in the "two-way" table above.



## APPENDIX B (Continued)

Table B-1 presents the joint probability of occurrence of various billet types and command selection outcome. Table B-2 provides joint probability data for commissioning sources and command selection outcome, while Tables B-3 and B-4 provide these data for various billet combinations and command selection outcome.



TABLE B-1

Joint Probability of Occurrence of  
Billet Types and Command Selection Outcome

Billet Type	Outcome		Total
	Selection	Nonselection	
F (CONUS SHR)	.26	.45	.71
No F	.14	.15	.29
H (XO)	.34	.32	.66
No H	.06	.28	.34
D (DEPT HD)	.24	.40	.64
No D	.16	.20	.36
S (SUB UTIL)	.18	.35	.53
No S	.22	.25	.47
O (OSEAS SHR)	.13	.34	.47
No O	.27	.26	.53
P (POST DEPT HD)	.20	.26	.46
No P	.20	.34	.54
T (PROF TRNG)	.22	.23	.45
No T	.18	.37	.55
C (GRAD ED)	.21	.23	.44
No C	.19	.37	.56
E (2ND DEPT HD)	.06	.17	.23
No E	.34	.43	.77
I (POST XO)	.07	.13	.20
No I	.33	.47	.80
B (PRE DEPT HD)	.05	.09	.14
No B	.35	.51	.86
Q (NON DEPT HD)	.05	.09	.14
No Q	.35	.51	.86
G (NON XO)	.01	.13	.14
No G	.39	.47	.86
K (LATE XO)	.02	.02	.04
No K	.38	.58	.96





TABLE B-2

Joint Probability of Occurrence of  
Commissioning Sources and Command Selection Outcome

Commissioning Source	Outcome		Total
	Selection	Nonselection	
OCS	.15	.29	.44
Other than OCS	.25	.31	.56
USNA	.14	.14	.28
Other than USNA	.26	.46	.72
NROTC	.07	.10	.17
Other than NROTC	.33	.50	.83
"OTHER"	.04	.07	.11
OCS, USNA, NROTC	.36	.53	.89



## APPENDIX B (Continued)

TABLE B-3

Joint Probability of Occurrence of Two-Billet  
Combinations and Command Selection Outcome

Billet Combination (order does not matter)	Outcome		Total
	Selection	Nonselection	
DF (DEPT HD, CONUS SHR)	.17	.29	.46
No DF	.23	.31	.54
FH (CONUS SHR, XO)	.22	.23	.45
No FH	.18	.37	.55
DH (DEPT HD, XO)	.21	.21	.42
No DH	.19	.39	.58
FF (CONUS SHR, CONUS SHR)	.10	.28	.38
No FF	.30	.32	.62
FO (CONUS SHR, OSEAS SHR)	.09	.26	.35
No FO	.31	.34	.65
DS (DEPT HD, SUB UTIL)	.10	.23	.33
No DS	.30	.37	.67
HS (XO, SUB UTIL)	.16	.17	.33
No HS	.24	.43	.67
HT (XO, PROF TRNG)	.18	.15	.33
No HT	.22	.45	.67
HC (XO, GRAD ED)	.17	.14	.31
No HC	.23	.46	.69
HP (XO, POST DEPT HD)	.16	.14	.30
No HP	.24	.46	.70
SS (SUB UTIL, SUB UTIL)	.05	.18	.23
No SS	.35	.42	.77
OS (OSEAS SHR, SUB UTIL)	.05	.16	.21
No OS	.35	.44	.79
EF (2ND DEPT HD, CONUS SHR)	.04	.13	.17
No EF	.36	.47	.83



TABLE B-4

Joint Probability of Occurrence of Three-Billet  
(and Commissioning Source) Combinations and  
Command Selection Outcome

Billet Combination (order does not matter)	Outcome		Total
	Selection	Nonselection	
DFH (DEPT HD, CONUS SHR, XO)	.15	.15	.30
No DFH	.25	.45	.70
FFD (CONUS SHR, CONUS SHR, DEPT HD)	.06	.18	.24
No FFD	.34	.42	.76
FHT (CONUS SHR, XO, PROF TRNG)	.13	.11	.24
No FHT	.27	.49	.76
DFO (DEPT HD, CONUS SHR, OSEAS SHR)	.06	.17	.23
No DFO	.34	.43	.77
DHT (DEPT HD, XO, PROF TRNG)	.12	.10	.22
No DHT	.28	.50	.78
FFO (CONUS SHR, CONUS SHR, OSEAS SHR)	.03	.16	.19
No FFO	.37	.44	.81
DFS (DEPT HD, CONUS SHR, SUB UTIL)	.04	.14	.18
No DFS	.36	.46	.82
SSC (SUB UTIL, SUB UTIL, GRAD ED)	.03	.13	.16
No SSC	.37	.47	.84
FFF (CONUS SHR, CONUS SHR, CONUS SHR)	.02	.12	.14
No FFF	.38	.48	.86
HTC (XO, PROF TRNG, GRAD ED)	.08	.06	.14
No HTC	.32	.54	.86
HC, USNA (XO, GRAD ED, USNA)	.08	.05	.13
No HC, USNA	.32	.55	.87
SSD (SUB UTIL, SUB UTIL, DEPT HD)	.02	.11	.13
No SSD	.38	.49	.87
SFO (SUB UTIL, CONUS SHR, OSEAS SHR)	.02	.10	.12
No SFO	.38	.50	.88
EFO (2ND DEPT HD, CONUS SHR, OSEAS SHR)	.01	.07	.08
No EFO	.39	.53	.92



# APPENDIX C

## CAREER PATHS TO 17TH YEAR OF SERVICE

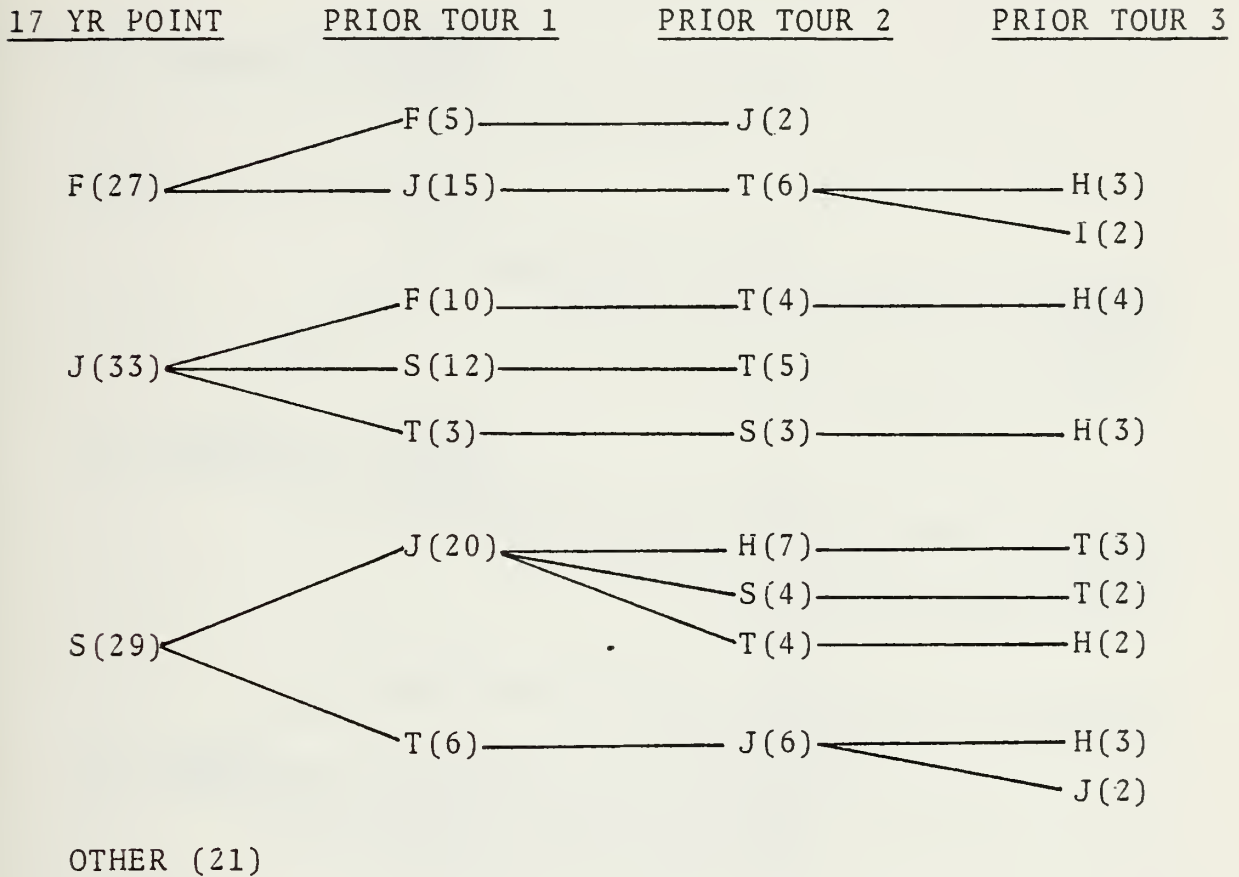


Figure C-1. Career paths to the 17th year of service for "early" selectees (N = 110). Sum of the branches will not always equal their source due to (1) the omission of categories with small numbers and (2) the coding of careers back to the 5 year point only. See Figure 2, page 21, for billet code definitions.





APPENDIX C (Continued)

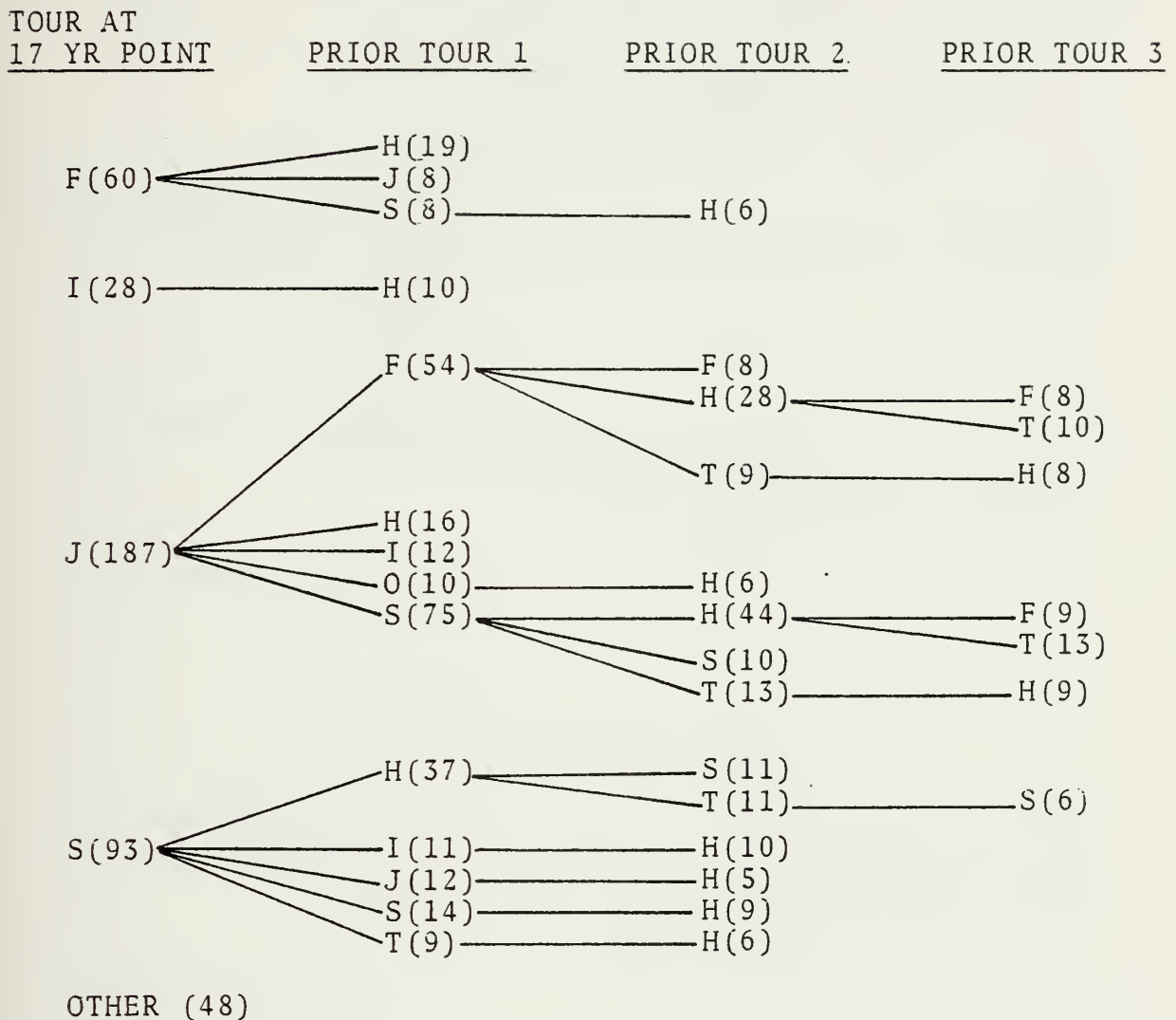


Figure C-2. Career paths to the 17th year of service for "due course" selectees (N = 416). Sum of the branches will not always equal their source for reasons described in Figure C-1. See Figure 2, page 21, for billet code definitions.



# APPENDIX C (Continued)

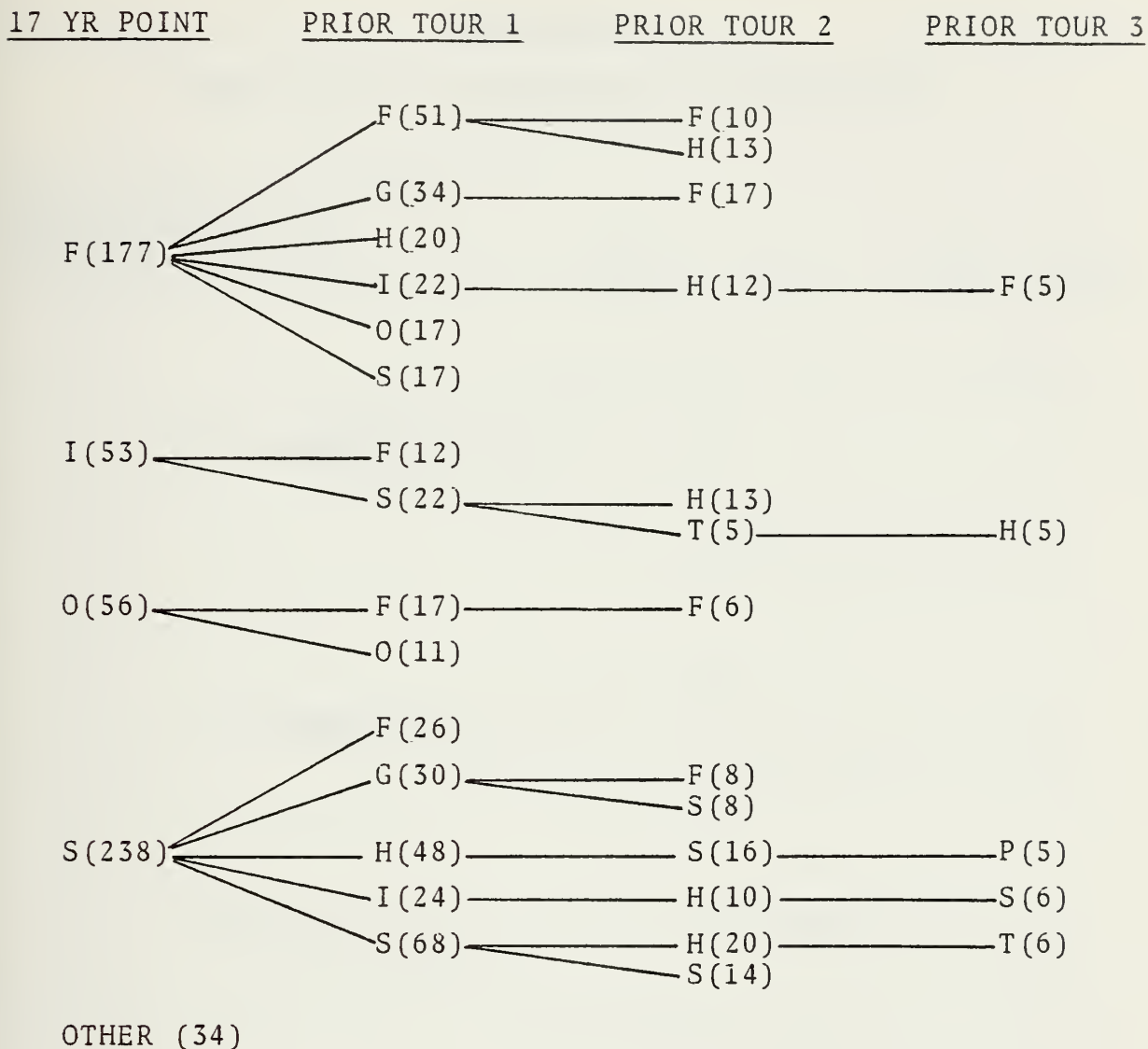


Figure C-3. Career paths to the 17th year of service for nonselectees (N = 558). Sum of the branches will not always equal their source for reasons described in Figure C-1. See Figure 2, page 21, for billet code definitions.



# APPENDIX D

## CAREER PATHS TO SELECTION OR NONSELECTION

TOUR AT SELECTION POINT  
(Average length of  
service = 11.5 yrs)

PRIOR TOUR 1

PRIOR TOUR 2

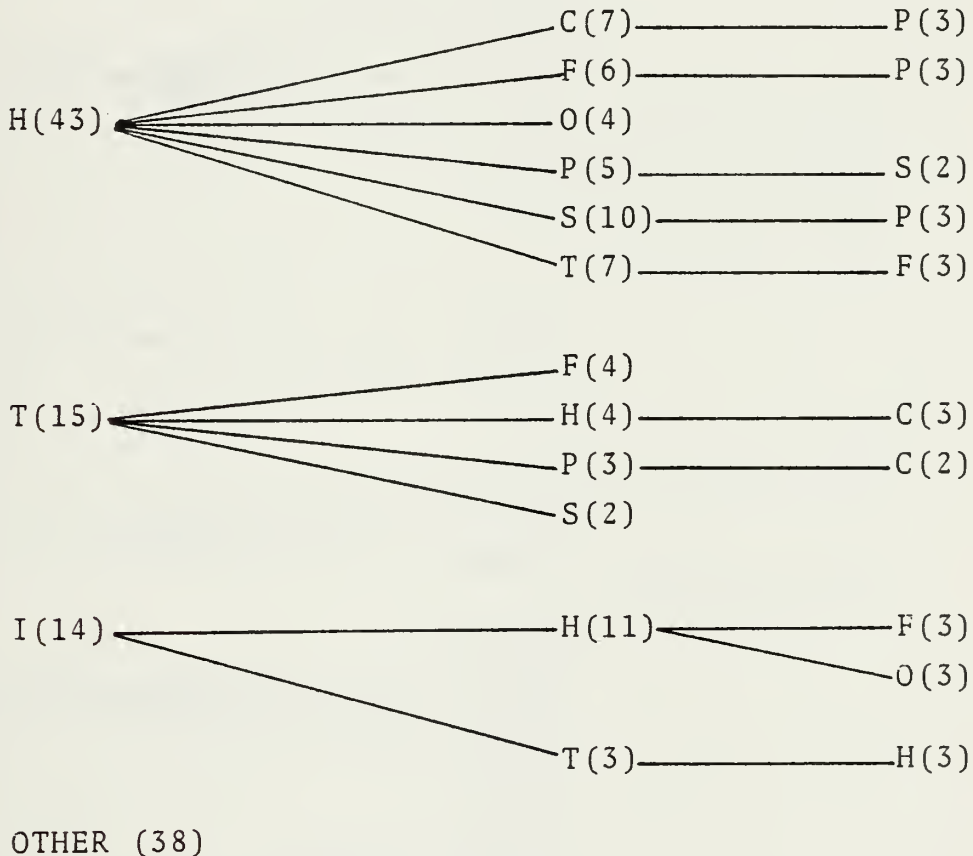


Figure D-1. Career paths to selection for "early" selectees (N = 110). Sum of the branches will not always equal their source due to (1) the omission of categories with small numbers and (2) the coding of careers back to the 5 year point only. See Figure 2, page 21, for billet code definitions.



# APPENDIX D (Continued)

TOUR AT 11.5 YEARS SERVICE      PRIOR TOUR 1      PRIOR TOUR 2

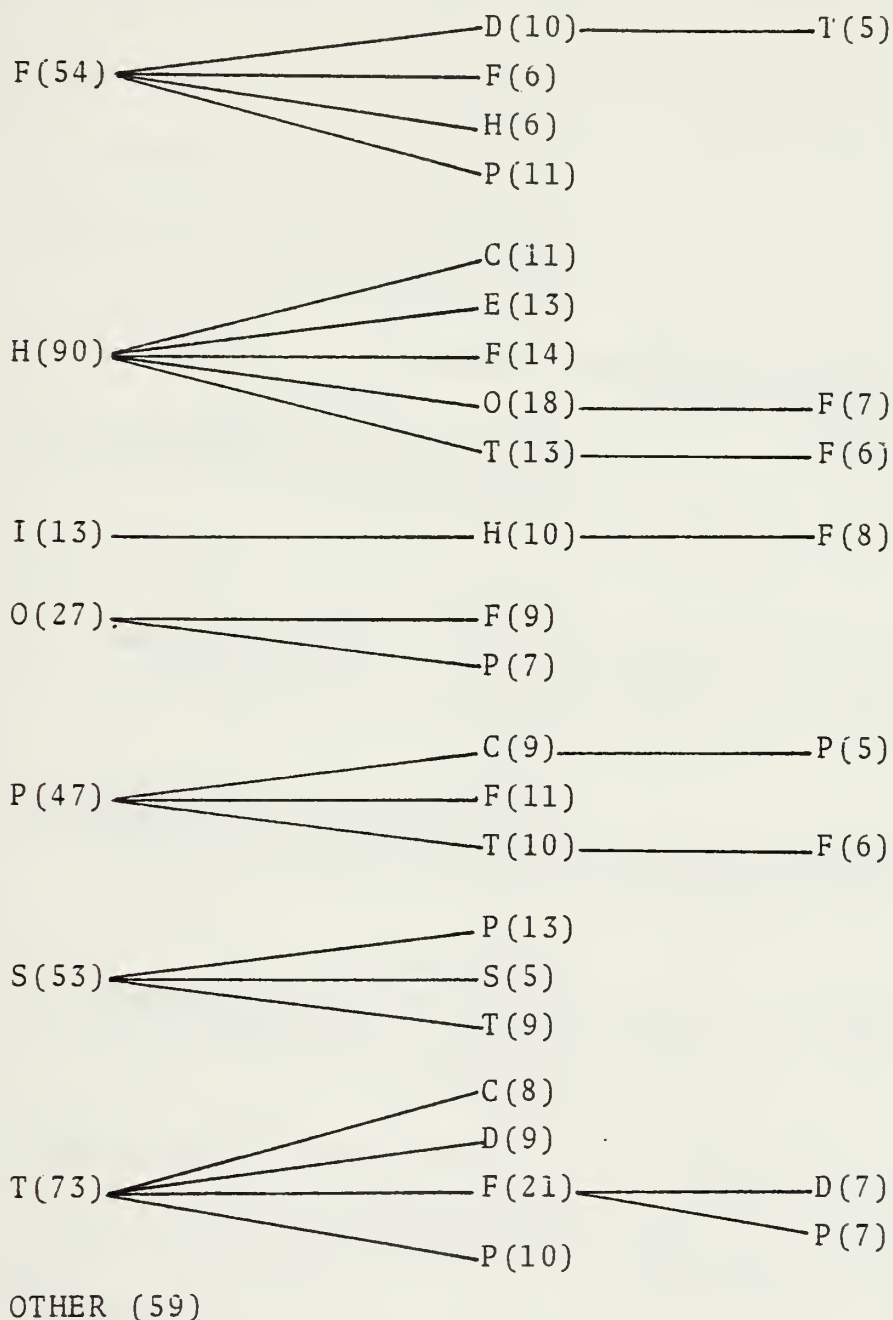


Figure D-2. Career paths to 11.5 years of service for "due course" selectees (N=416). Sum of branches will not always equal their source for reasons described in Figure D-1. See Figure 2, page 21, for billet code definitions.





# APPENDIX D (Continued)

TOUR AT 11.5 YEARS SERVICE      PRIOR TOUR 1      PRIOR TOUR 2

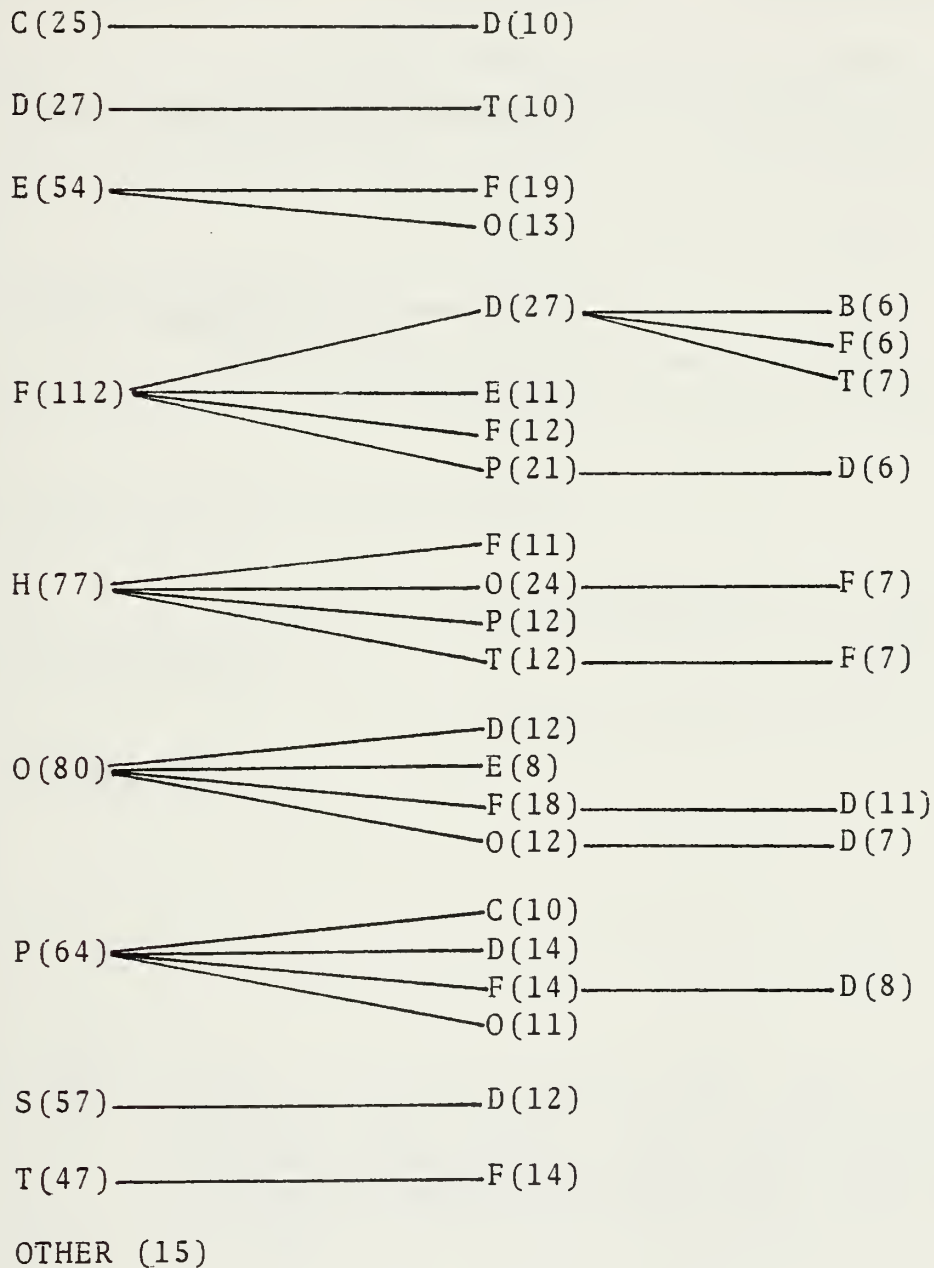


Figure D-3. Career paths to 11.5 years of service for non-selectees (N = 558). Sum of the branches will not always equal their source for reasons described in Figure D-1. See Figure 2, page 21, for billet code definitions.



# Appendix D (Continued)

TOUR AT SELECTION POINT  
(Average length of  
service = 15 yrs)

PRIOR TOUR 1

PRIOR TOUR 2

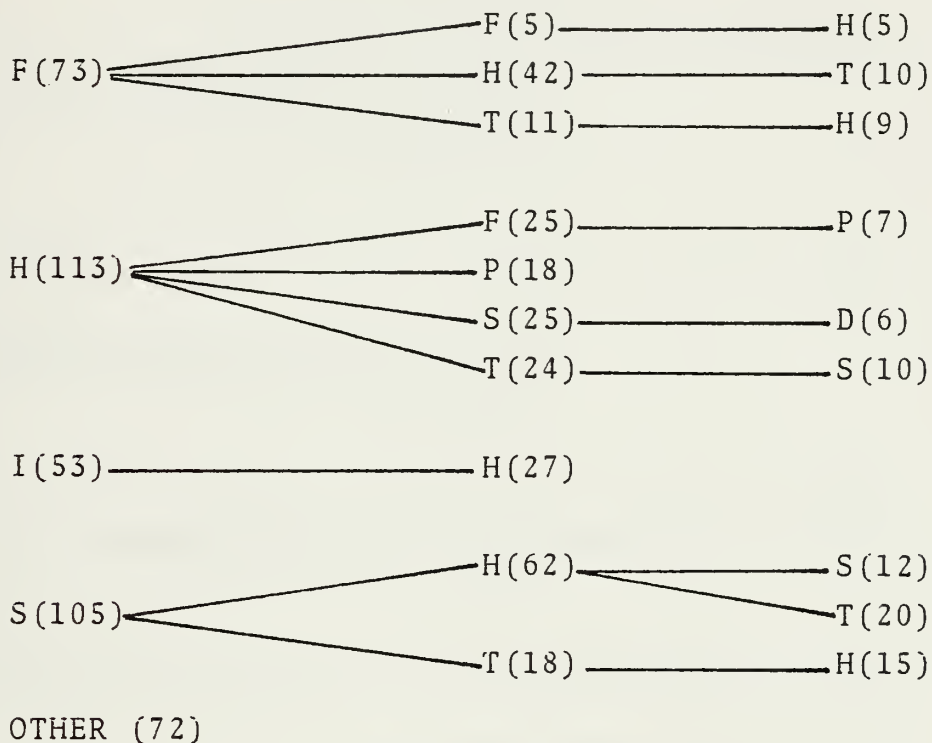


Figure D-4. Career paths to selection for "due course" selectees (N = 416). Sum of the branches will not always equal their source for reasons described in Figure D-1. See Figure 2, page 21, for billet code definitions.



# APPENDIX D (Continued)

## TOUR AT 15 YEARS SERVICE

## PRIOR TOUR 1

## PRIOR TOUR 2

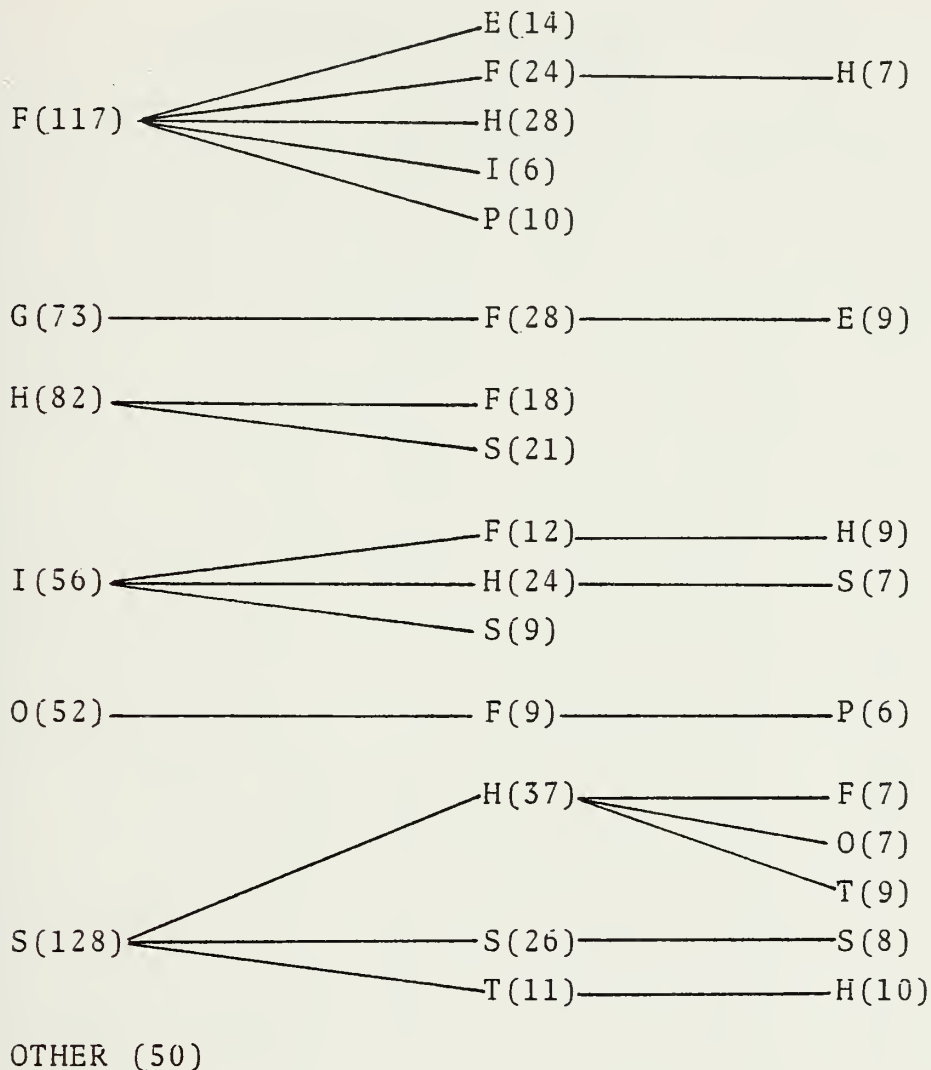


Figure D-5. Career paths to 15 years of service for non-selectees (N = 558). Sum of the branches will not always equal their source for reasons described in Figure D-1. See Figure 2, page 21, for billet code definitions.



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SECRET

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Selectees by Year Group

YEAR	BILLET POSITIONS												SPECIAL
	1	2	3	4	5	6	7	8	9	10	11	12	
1960													
1961													
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2026													
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2028													
2029													
2030													



Selectees by Year Group

Y6	BILLY BOYS										SEAL									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20



## Selectees by Year Group

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61	62	63	64	65	66	67	68	69	70
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141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910
911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950
951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970
971	972	973	974	975	976	977	978	979	980
981	982	983	984	985	986	987	988	989	990
991	992	993	994	995	996	997	998	999	1000

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Selectees by Year Group

Y6	BILLET CODES										BILLET
	1	2	3	4	5	6	7	8	9	10	
61	61	61	61	61	61	61	61	61	61	61	61
62	62	62	62	62	62	62	62	62	62	62	62
63	63	63	63	63	63	63	63	63	63	63	63
64	64	64	64	64	64	64	64	64	64	64	64
65	65	65	65	65	65	65	65	65	65	65	65
66	66	66	66	66	66	66	66	66	66	66	66
67	67	67	67	67	67	67	67	67	67	67	67
68	68	68	68	68	68	68	68	68	68	68	68
69	69	69	69	69	69	69	69	69	69	69	69
70	70	70	70	70	70	70	70	70	70	70	70
71	71	71	71	71	71	71	71	71	71	71	71
72	72	72	72	72	72	72	72	72	72	72	72
73	73	73	73	73	73	73	73	73	73	73	73
74	74	74	74	74	74	74	74	74	74	74	74
75	75	75	75	75	75	75	75	75	75	75	75
76	76	76	76	76	76	76	76	76	76	76	76
77	77	77	77	77	77	77	77	77	77	77	77
78	78	78	78	78	78	78	78	78	78	78	78
79	79	79	79	79	79	79	79	79	79	79	79
80	80	80	80	80	80	80	80	80	80	80	80
81	81	81	81	81	81	81	81	81	81	81	81
82	82	82	82	82	82	82	82	82	82	82	82
83	83	83	83	83	83	83	83	83	83	83	83
84	84	84	84	84	84	84	84	84	84	84	84
85	85	85	85	85	85	85	85	85	85	85	85
86	86	86	86	86	86	86	86	86	86	86	86
87	87	87	87	87	87	87	87	87	87	87	87
88	88	88	88	88	88	88	88	88	88	88	88
89	89	89	89	89	89	89	89	89	89	89	89
90	90	90	90	90	90	90	90	90	90	90	90
91	91	91	91	91	91	91	91	91	91	91	91
92	92	92	92	92	92	92	92	92	92	92	92
93	93	93	93	93	93	93	93	93	93	93	93
94	94	94	94	94	94	94	94	94	94	94	94
95	95	95	95	95	95	95	95	95	95	95	95
96	96	96	96	96	96	96	96	96	96	96	96
97	97	97	97	97	97	97	97	97	97	97	97
98	98	98	98	98	98	98	98	98	98	98	98
99	99	99	99	99	99	99	99	99	99	99	99
00	00	00	00	00	00	00	00	00	00	00	00





Selectees by Year Group

Y6	BULLET 20035										SECRET
	1	2	3	4	5	6	7	8	9	10	
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Selectees by Year Group

VC	BELL ST. COOPER										SPECIAL
	1	2	3	4	5	6	7	8	9	10	
61											
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Selectees by Year Group

YEAR	BILLYT CROPS										SPECIAL
	1	2	3	4	5	6	7	8	9	10	
1960											
1961											
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2030											



Selectees by Year Group

NO	NAME	BULLET CODES										TOTAL
		1	2	3	4	5	6	7	8	9	10	
1	ALAN											
2	ALAN											
3	ALAN											
4	ALAN											
5	ALAN											
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97	ALAN											
98	ALAN											
99	ALAN											
100	ALAN											





APPENDIX E (Continued)

Nonselectees by Year Group

YEAR	COUNT	BILLY COOKS											
		1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
1964	1												
1965	1												
1966	1												
1967	1												
1968	1												
1969	1												
1970	1												
1971	1												
1972	1												
1973	1												
1974	1												
1975	1												



Nonselectees by Year Group

YEAR	GRADE	MAY 1997											
		1	2	3	4	5	6	7	8	9	10	11	12
1997	1												
1997	2												
1997	3												
1997	4												
1997	5												
1997	6												
1997	7												
1997	8												
1997	9												
1997	10												
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1997	98												
1997	99												
1997	100												



Nonselectees by Year Group

YEAR	GRADE	BULLET CODES									
		1	2	3	4	5	6	7	8	9	10
1968	1										
1969	1										
1970	1										
1971	1										
1972	1										
1973	1										
1974	1										
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2099	1										
2100	1										



## APPENDIX E (Continued)

### Nonselectees by Year Group

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Nonselectees by Year Group

NO	GRADE	BILLING CODES											
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Nonselectees by Year Group

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Nonselectees by Year Group

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Nonselectees by Year Group

YEAR	GRADE	SCHOOL											
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Nonselectees by Year Group

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Nonselectees by Year Group

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## APPENDIX F

### SUMMARY LISTING OF CODES USED TO IDENTIFY BILLET CATEGORIES

#### Codes for Billet Categories

B - Pre-Department Head (PRE DEPT HD)	J - Commanding Officer (CO)
C - Pursuing Graduate-Level Education (GRAD ED)	K - Late XO (LATE XO)
D - Department Head (DEPT HD)	L - Post-CO (POST CO)
E - Second Department Head (2ND DEPT HD)	N - Non-CO (NON CO)
F - Ashore, CONUS (CONUS SHR)	O - Ashore, overseas (OSEAS SHR)
G - Non-XO (NON XO)	P - Post-Department Head (POST DEPT HD)
H - Executive Officer (XO)	Q - Non-Department Head (NON DEPT HD)
I - Post-XO (POST XO)	S - Subspecialty Utilization (SUB UTIL)
T - Professional Training (PROF TRNG)	

#### Codes for Billet Category Aggregations

W - "Traditional" Sea Tour (includes sea tour billet codes B,D,  
E,G,H,I,J,K,L and N)

X - "Non-Traditional" Sea Tour (includes sea tour codes Q and  
P only)

Y - Subspecialty Utilization (includes shore tour code S only)

Z - Ashore, other (includes all other shore tour codes, i.e.,  
C,F,O and T)

SEA - All sea tours (combines W and X)

SHORE - All shore tours (combines Y and Z)



## LIST OF REFERENCES

- Lindgren, B.W., McElrath, G.W., and Berry, D.A., Introduction to Probability and Statistics, 4th ed., MacMillan, 1978.
- Morris, E.L., Jr., An Analysis of Officer Professional Development in the VP (Maritime Patrol) Aviation Community with Application of an Interactive Computer Model for Seatour Opportunity Determination, M.S. Thesis, Naval Postgraduate School, Monterey, CA, June 1980.
- Nededog, J.T., A Study of Twice Failed Select for Promotion of Lieutenants in the United States Navy and its Cognitive Impact on Cost Savings, M.S. Thesis, Naval Postgraduate School, Monterey, CA, December 1975.
- Nie, N.H. and others, Statistical Package for the Social Sciences, 2nd ed., McGraw-Hill, 1975.
- Panchura, J.M., Jr., U.S. Naval Officer Perceptions of Billet Assignments and the Placement/Assignment Process, M.S. Thesis, Naval Postgraduate School, Monterey, CA, June 1979.
- Parish, G.R., III, The Relation of Naval Officer Promotion to Commission Source and Billet History, M.S. Thesis, Naval Postgraduate School, Monterey, CA, June 1979.
- Robertson, D.W. and Pass, J.J., Relation of Officer First Assignment and Education Major to Retention (NPRDC Technical Report 79-12). San Diego: Navy Personnel Research and Development Center, March 1979.
- U.S. Bureau of Naval Personnel, Manual of Navy Officer Manpower and Personnel Classifications, NAVPERS 15839D, Vol. I & II, Naval Publications and Forms Center, 19 July 1978.
- U.S. Bureau of Naval Personnel, Unrestricted Line Officer Career Guidebook, NAVPERS 15197A, Naval Publications and Forms Center, 1979.





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Department of the Navy  
Washington, D.C. 20350
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Surface Officer Program Manager  
Office of DCNO (MPT)  
Arlington Annex  
Washington, D.C. 20370
16. Mr. M. K. Malehorn (OP-102) 1  
Office of DCNO (MPT)  
Arlington Annex  
Washington, D.C. 20370
17. Dr. Kneale T. Marshall (OP-01T) 1  
Office of DCNO (MPT)  
Arlington Annex  
Washington, D.C. 20370
18. Head Long Range MPT/MOB Planning Branch (OP/110) 1  
Office of DCNO (MPT)  
Arlington Annex  
Washington, D.C. 20370
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Office of DCNO (MPT)  
Arlington Annex  
Washington, D.C. 20370
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Navy Personnel R&D Center  
San Diego, CA 92152
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ATTN: Code 41  
Naval Military Personnel Command  
Washington, D.C. 20370



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5213 Castle Road  
Virginia Beach, VA 23464









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